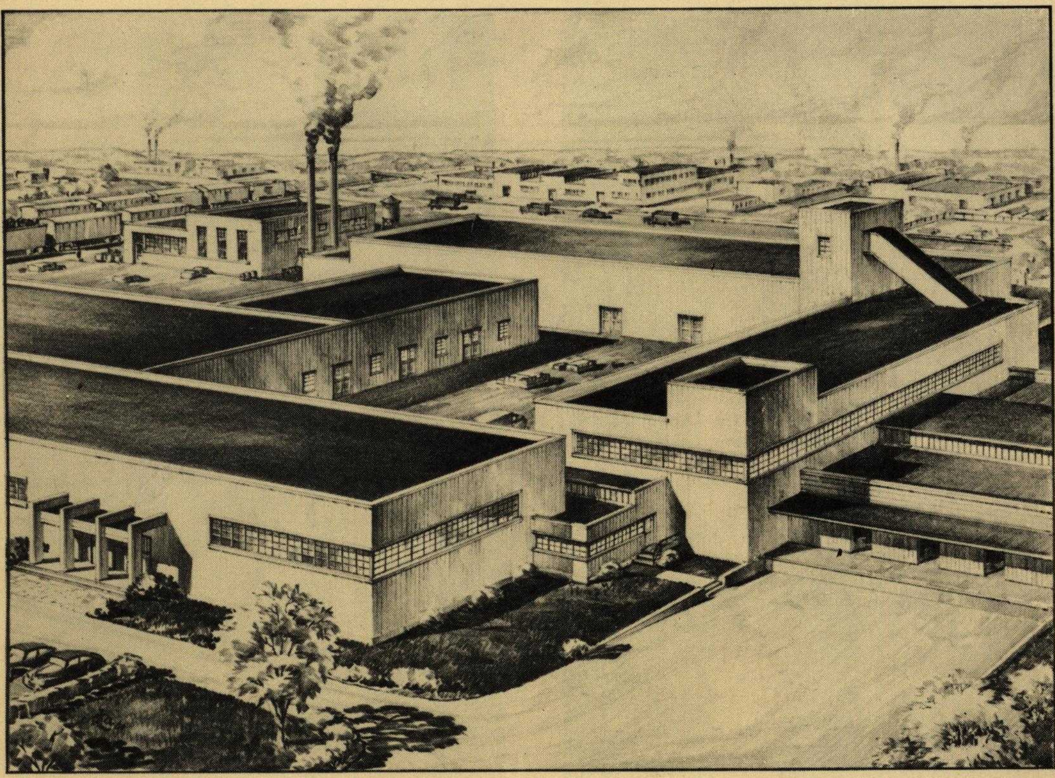
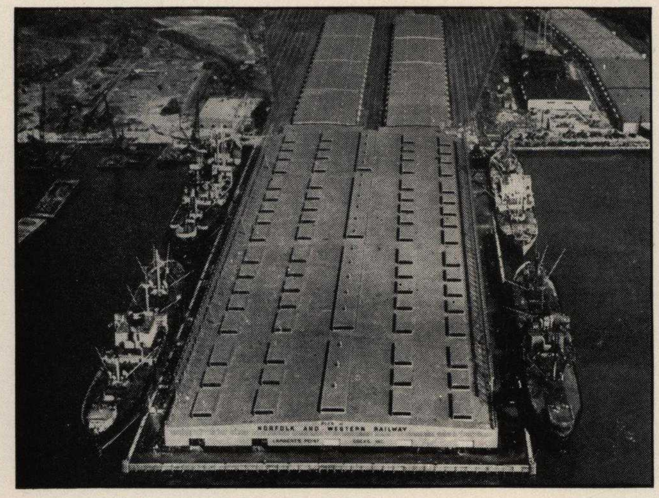


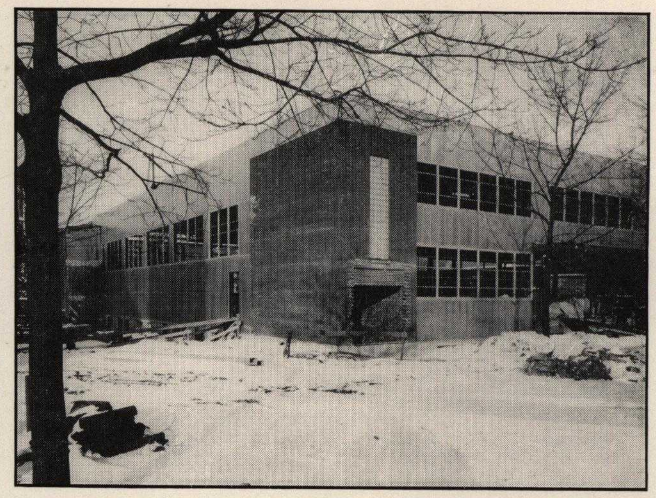
Fenestra

STEEL AND ALUMINUM BUILDING PANELS

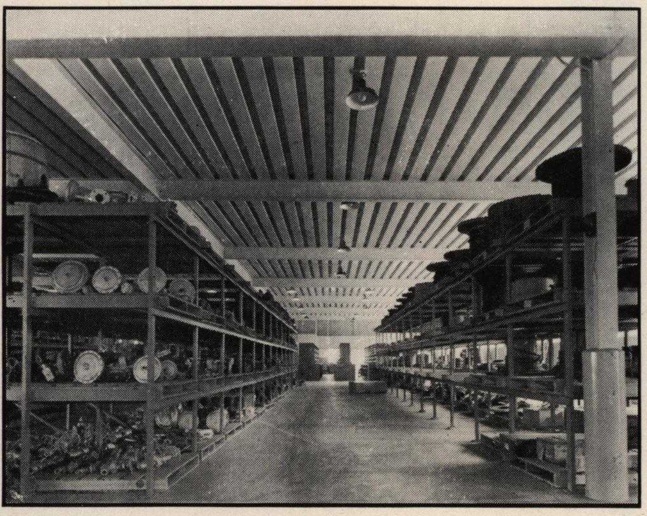
SWEET'S ARCHITECTURAL FILE, 1950



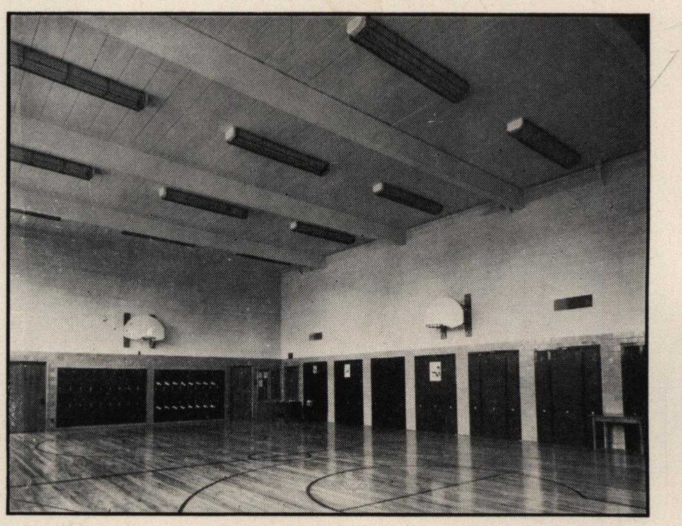
Holorib Roof Deck at Norfolk & Western Railway Pier, Lambert's Point, Va. Archt: Norfolk & Western Railway. Contr: McLean Contracting Co.



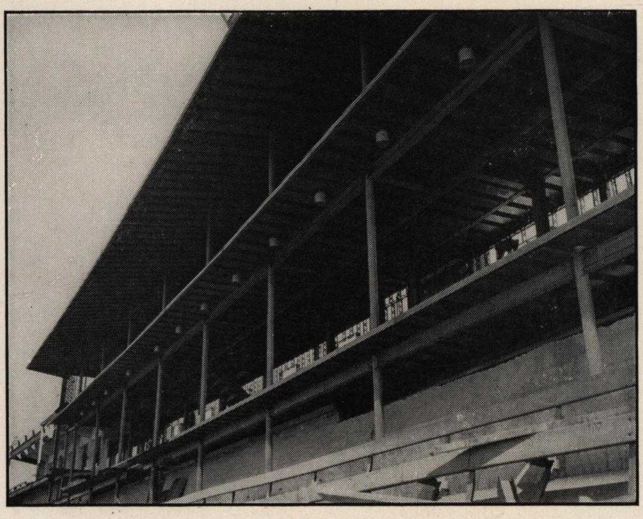
Recreation Bldg., Endicott-Johnson Corp., Endicott City, N. Y. "C," "D" and "AD" panels. Archt: A. T. Lacey & Sons. Contr: Vincent J. Smith, Inc.



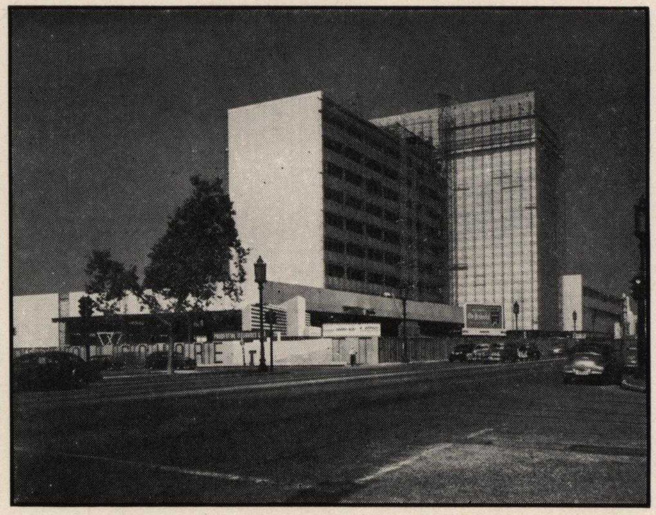
Ceiling of Fenestra Type "D" Building Panels. Union Oil Company, Oleum, Calif. Archt: Donald R. Warren. Contractor: McDonald, Young & Nelson.



Long span acoustical "AD" Panels; Samuel B. Dixon School, Detroit, Mich. Architect: Lane, Davenport & Meyers. Contractor: H. B. Culbertson Co.

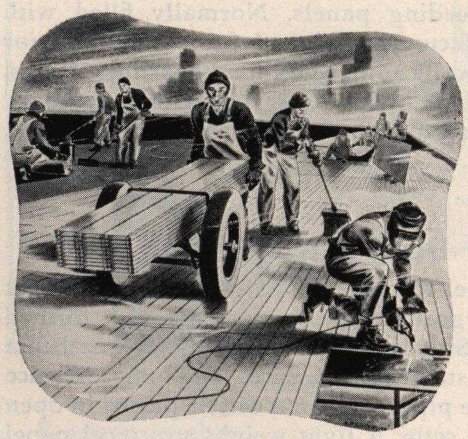


Pressbox constructed of Fenestra "D" Panels, the Coliseum, Los Angeles, California. Architect: Bennett & Bennett. Contractor: Barrett & Hilp.



Prudential Insurance Co., Los Angeles. Fenestra Type "D" Panel flooring. Archt: Wurdeman & Becket. Contr: Wm. Simpson Construction Company.

Fenestra
BUILDING PANELS



Fenestra building panels can be laid in any weather in which men can work.

THE FENESTRA CODE

. . . To provide the architectural profession specifically, and the construction industry generally, with building products of excellent design and of uniform high quality.

. . . To contribute to the progress of architecture by developing new and superior materials through research.

. . . To publish each year better and more complete details of Fenestra products, including such information as will prove most helpful to the profession.

HOLORIB Steel Deck, the first Fenestra* building panel, was a pioneer in its field. It was the first satisfactory solution to the problem of using steel to provide a strong, durable and light-weight insulated roof sheathing. Its wide acceptance encouraged the Detroit Steel Products Company to expand the uses of sheet steel in building construction. Three additional structural units were added—the "C", "D" and "AD" panels—for use in floors, walls, roofs and partitions. Their acceptance has been as widespread as that of Holorib Deck. The four panels, combined with Fenestra steel windows and doors, can be used to completely enclose a structure. . . . Engineers of the Building Panel Division of the Detroit Steel Products Company are available to provide detailed layouts and to assist with the panel problems of your particular job.

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DETROIT STEEL PRODUCTS COMPANY

General Offices, 2250 East Grand Boulevard, Detroit 11, Michigan. Sales Offices in principal cities; factories in Detroit, Buffalo, Philadelphia, Oakland and Erie, Pa. Member of Producers' Council and Metal Roof Deck Technical Institute; affiliated with American Institute of Architects.

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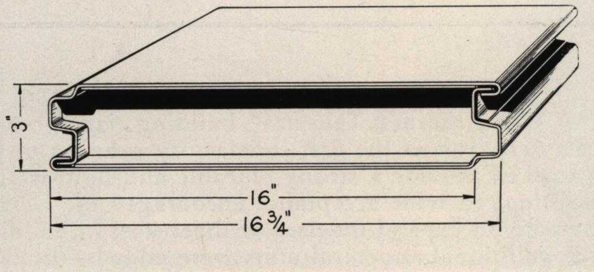
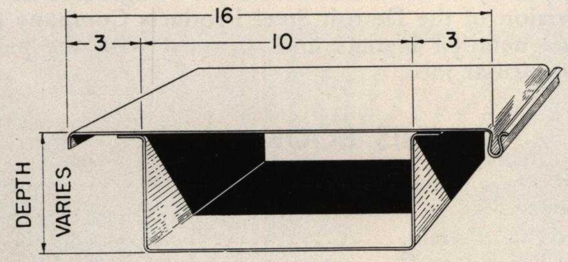
BUILDING PANEL UNITS



TYPE "C" WALL PANEL

Composed of two formed metal members (steel, aluminum or a combination of each) pressed together, with felt at each side. Felt is folded between the two metal members to prevent through metal contact and to isolate dissimilar metals; it also seals interlocking joints of succeeding panels. Normally filled with insulation at factory. Designed for use as exterior and partition walls and as non-load bearing ceilings. Standardized in 3″ depth and 16″ width. Standard gage in steel is 18 USS, and in aluminum 16 B & S.

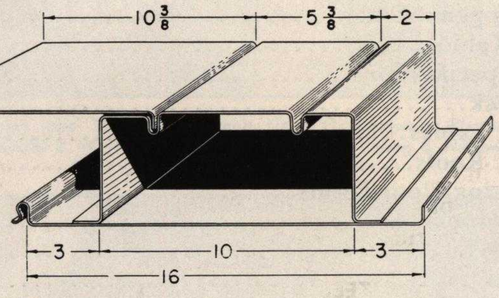
See Pages 5-6



TYPE "D" DECK AND FLOOR PANEL

Cellular panel formed by spot-welding a steel flat surface to integral steel web members of a formed beam section. Side-laps interlock. Cellular box beam is used for installation of wires and other service facilities. Large pipes and ducts can be placed in open space between cells. A light weight structural panel generally used for floors and long span roofs; also used as structural curtain wall. Flat surface is placed either up or down. Standard width is 16″. Depths range from 1½″ to 7½″, and gages from 18 to 12.

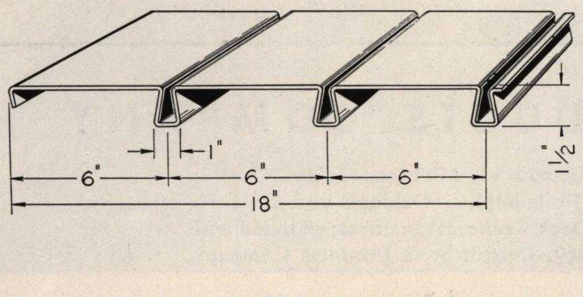
See Page 8



TYPE "AD" DECK AND FLOOR PANEL

Similar to type "D" panel but with addition of two female joints in the beam member. A separate service plate is provided. The assembled interlocked panel provides a two cell box beam with two flat surfaces. It supplies complete support for roof or floor covering material, while utilizing the bottom surface as a flat exposed ceiling. Removable service plate allows access to every second cell for placement of wiring and plumbing. Widths standardized at 16″. Standard depths range from 3″ to 7½″, and gages from 16 to 13.

See Page 9



HOLORIB DECK

Plain or copper-bearing steel sheets self-reinforced by three triangular ribs. Ribs run lengthwise and are spaced on 6″ centers. Sheets are 18″ wide, in lengths as required for purlin spacing within practical limits. Triangular construction of ribs provides exceptional vertical and lateral stability. Crimped ends allow the sheets to "telescope" together. Side-laps interlock. Provides smooth-surfaced roof sheathing ready for application of desired covering. Sheet gages are 18 and 20. Other gages are available on your special order.

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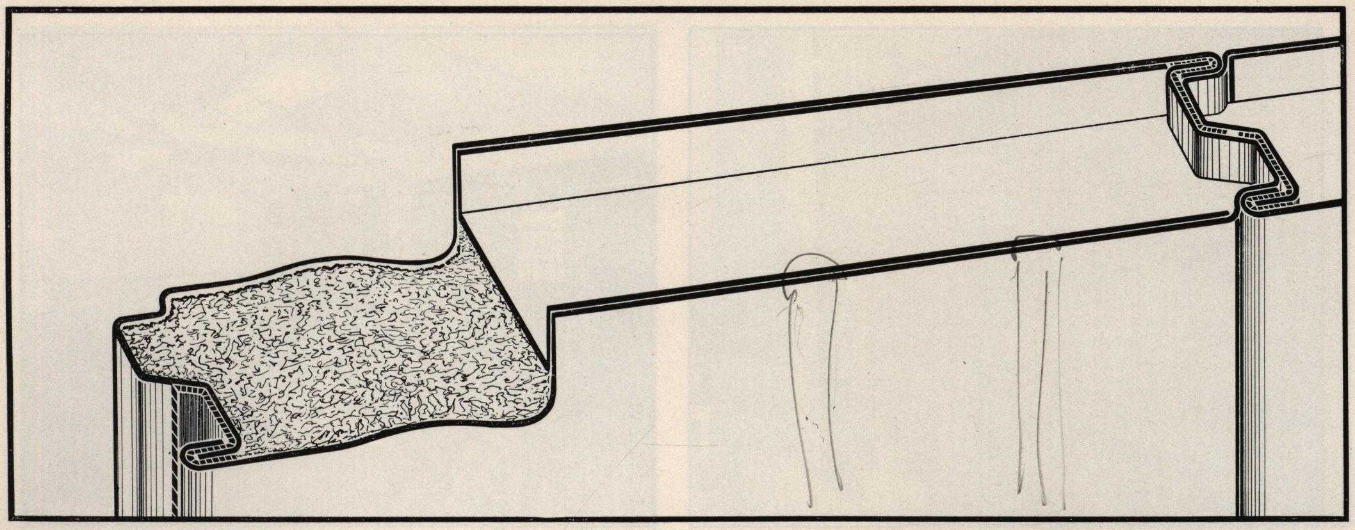
TYPE "C" WALL PANELS

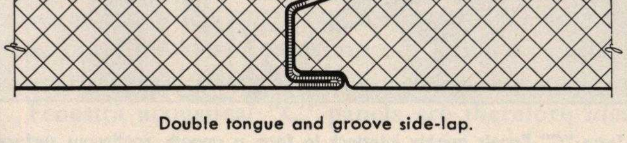
STEEL, ALUMINUM AND ALUMINUM-STEEL



GENERAL

Fenestra insulated type "C" steel, aluminum, and aluminum-steel wall panels were developed to provide the answer to dry wall construction, enabling the builder to enclose large areas in a minimum of time. They are designed to serve as exterior and partition walls and as non-load bearing ceilings. The panels blend well with various architectural designs and can be used in a variety of places—factories, warehouses, stores, theaters, garages, etc.

The type "C" wall panel consists of two members pressed together at the sides to form a structural unit. Before pressing, a strip of felt is inserted in the full length of the joint to prevent metal-to-metal contact between the two members of the panel. The panels are factory filled with a boro-silicate fiberglass insulation. This insulation was chosen because of its excellent insulating qualities. An end closure is firmly attached at both ends of the panels to insure the proper retention of insulation and to seal the panel. Panels are manufactured in a standard width of 16″ and a standard depth of 3″ The ordinary lengths used in construction vary between 6′ and 14′ in order to allow ease of shipping and handling, to accommodate floor heights, and to permit spacing of structural steel supports.



Double tongue and groove side-lap.

The interlocking tongue and groove connection between adjacent panels offers a joint that unites the series of units into a continuing wall surface (*below left*). The nature of these connecting joints allows panels to be used either vertically or horizontally in walls and partitions. When panels are used in a horizontal position the double tongue and groove joint acts to shiplap the construction, adding to the weather-resisting properties of the complete wall unit.

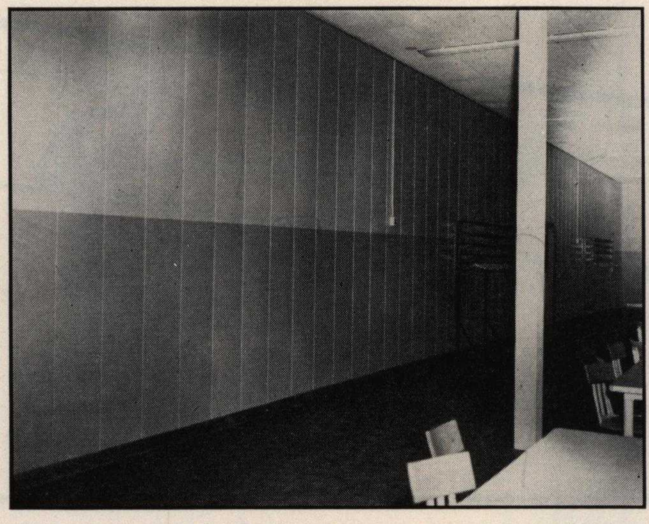
Where Fenestra "C" panels are being used as semi-permanent constructions enclosing an elevation of a building to which a future extension is contemplated, the Detroit Steel Products Company details allow for 100% salvaging of the panels for this extension of the building. The inherent economy and flexibility obtained are self-evident, and have prompted the use of "C" panels in this fashion in many new industrial installations

STEEL TYPE "C" WALL PANELS

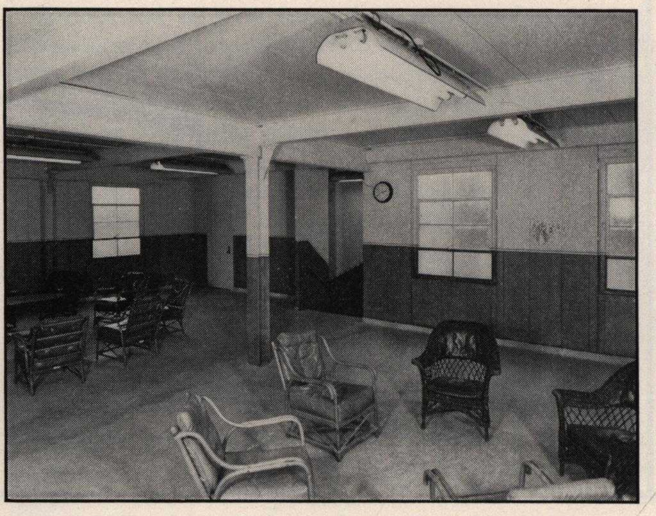
Steel type "C" panels are manufactured of 18-gage sheet steel. The panels receive a baked-on coat of shop primer that forms an excellent surface for the finish coat to be field applied by the painting contractor. The all-steel panel has the advantages of high structural strength with low initial cost. The surface can be painted to give any desired color or finish. The panels are caulked during erection by buttering a mastic in both female joints prior to pushing the panels together, or by rolling an asphalt impregnated cotton string into the joint so that on casual observation no string is exposed to view. The steel "C" panel is an effective sound insulator; its sound transmission rating by test is 41 decibels.

TYPE "C" WALL PANELS

STEEL, ALUMINUM AND ALUMINUM-STEEL



Type "C" Aluminum Panels in a southern manufacturing plant. The Panels are here painted for decorative effect. Exterior surfaces are unpainted.



Fenestra Type "C" Panels in both walls and roof of a building designed by Schenck & Williams. Factory-filled insulation cuts heating costs.

ALUMINUM TYPE "C" WALL PANELS

Fenestra aluminum type "C" wall panels are formed from 52S¼H aluminum alloy, with mill finish in 16 B & S gage. The 52S¼H alloy has the advantages of high structural strength and an even greater resistance to corrosion than other aluminum alloys.

The extreme light weight of the long length Fenestra aluminum panels allows easier and faster handling and erection in the field. A standard aluminum insulated panel 12′ long weighs only 50 pounds. The erection procedure is the same as for steel panels except that direct contact between aluminum and steel must be prevented. A coating of red lead or bituminous paint is recommended for this purpose.

Maintenance costs become negligible with an all-aluminum construction. The original mill finish will of course darken in weathering.

Aluminum "C" panels can be caulked by either method used for steel "C" panels (*see page* 5).

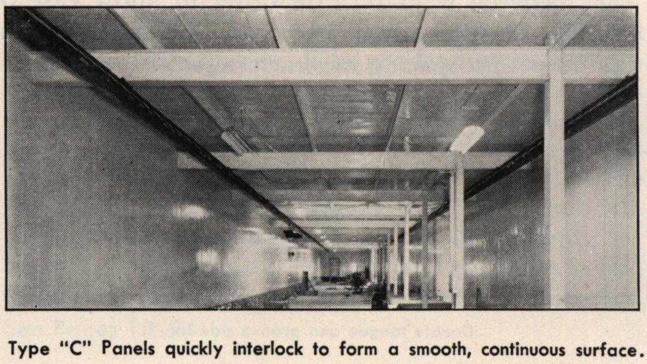
ALUMINUM-STEEL TYPE "C" WALL PANELS

To supply the need for an economical panel which would have an aluminum exterior surface for high resistance to corrosion and weather, but did not require this type surface on the interior, the Detroit Steel Products Company developed the aluminum-steel "C" panel, which has an aluminum surface on the exterior and a steel surface on the interior. The exterior surface retains the many advantages of aluminum while the interior surface may be painted for protection and decorative effect.

"C" PANEL ATTACHMENT METHODS

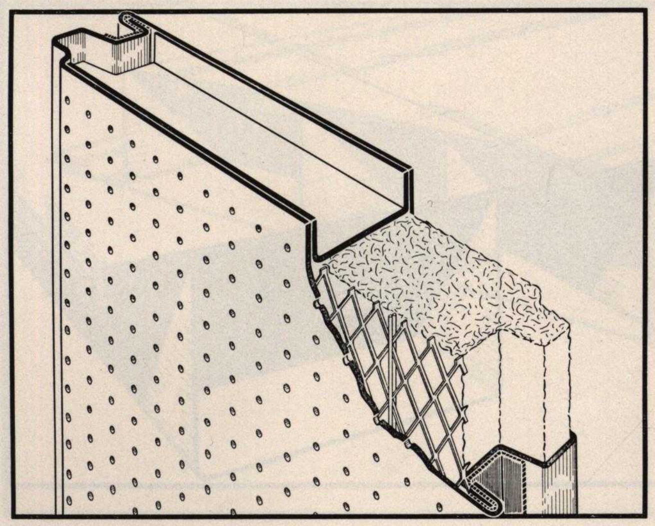
Type "C" panel attachment methods for the horizontal and vertical installation of both steel and aluminum panels are illustrated on page 29. Welding and bolting are the two most common methods for attachment of steel "C" wall panels erected horizontally or vertically. The principal method of bolting utilizes a toggle bolt (*see page 29 for illustration*). In some special instances, it is necessary to use a through bolt where bolt extends through entire panel.

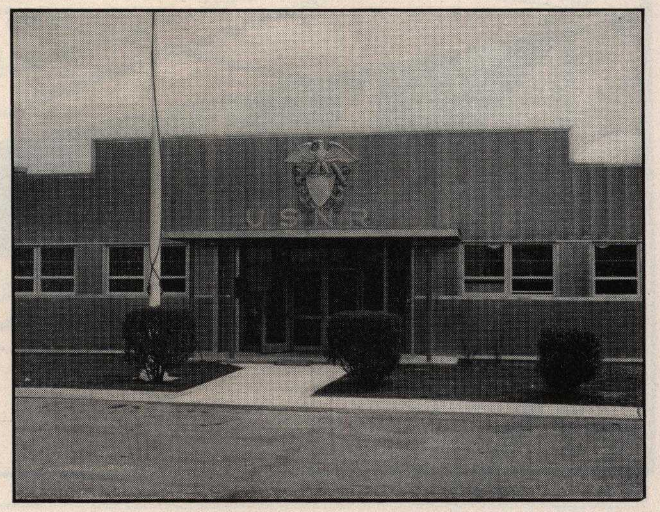
For particular use in conjunction with aluminum panels, extrusions have been developed which enable the panel to be placed in position and held through the action of the extrusion on the panel. These extrusions eliminate bolting and accelerate erection. They also provide 100% salvageability of the panel wall when placed in buildings which are to be later expanded.



Type "C" Panels quickly interlock to form a smooth, continuous surface.

ACOUSTICALLY TREATED "C" PANELS





ACOUSTICALLY treated Fenestra "C" panels have been designed to meet the ever increasing demand for noise quieting in factories, office buildings, schools and hospitals, for it is well recognized that decreased noise means increased efficiency and well-being.

Acoustically treated "C" panels are formed by perforating one surface with 1/8" round holes so placed that 9.3% open area is provided for the entrance of the sound energy into the sound absorbing medium.

Tests conducted by a leading sound laboratory prove Fenestra acoustical "C" panels to have a noise reduction co-efficient of .80 over the normal frequency range used in testing. This rating ranks Fenestra acoustical "C" panels among the best of acoustical materials.

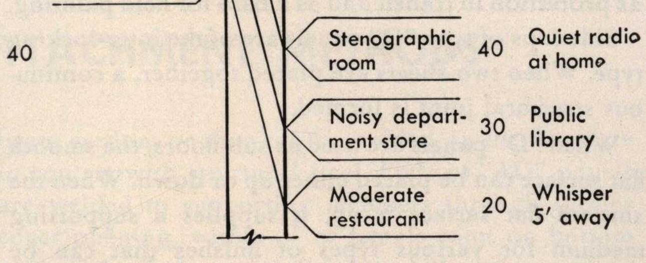
In addition to providing good sound absorption qualities, Fenestra acoustical "C" panels have the added feature of a good sound transmission rating. Much of the sound energy that strikes the surface of the panels is spent in passing through the three inches of insulation and the panel walls. The sound transmission rating from tests conducted on the perforated acoustical "C" panel is 33.3 decibels. The sound transmission rating for steel "C" panels unperforated is 41.0 decibels. While perforating has greatly improved the sound absorption factor, the sound transmission factor has only been reduced by 6.7 decibels. The meaning of such a rating can best be visualized from the noise reduction diagram at right.

Fenestra acoustical "C" panels are therefore ideal for use as interior partitions when it is desirable to reduce both the noise of the room and the noise that would pass through the walls to adjacent rooms.

In addition to noise quieting, Fenestra acoustically treated "C" panels offer other advantages:

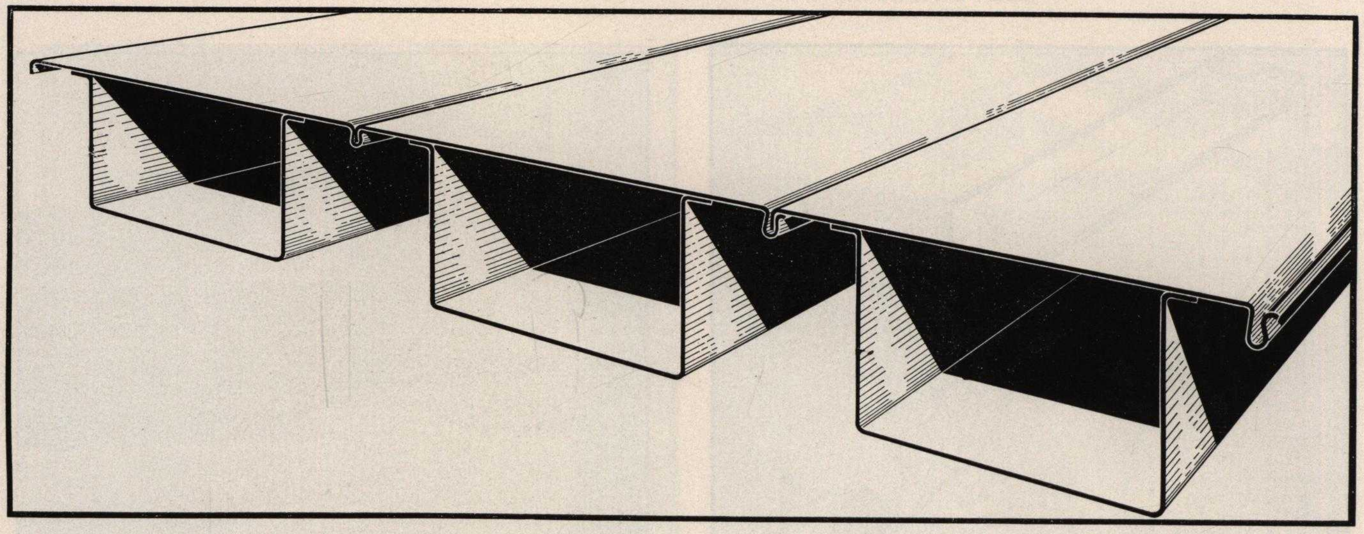
1. Easy and quick to install.
2. Neat architectural appearance.
3. Non-combustible.
4. Adaptable to a variety of buildings—factories schools, stores, office buildings, etc.

NOISE REDUCTION DIAGRAM



Example: The resultant noise level in a room separated by Fenestra acoustical "C" panels from a stenographic room will be equivalent to a quiet radio at home.

TYPE "D" DECK AND FLOOR PANELS



CELLULAR light weight structural sheet steel sub-floors are provided by Fenestra type "D" panels. They are rapidly installed to provide a working platform for other trades, expediting the progress of the building.

In addition to sub-floors, "D" panels are also used as long span roofs and structural sidewalls. For long span roof construction, the smooth continuous top plate offers 100% bonding for application of insulation and built-up roofing. The closed cellular underside presents a pleasing architectural appearance and needs no finish other than painting.

The Fenestra type "D" panel has one flat continuous surface. This flat surface is spot-welded to the formed beam section to provide a structural cellular panel. Type "D" panels are normally manufactured in 16″ width. Depths range from 1½″ to 7½″ and gages from 18 to 12. Before shipment, each panel receives a sprayed-on and oven-baked coat of shop paint to act as protection in transit and as a base for field painting.

Side-laps of type "D" panels are of the inter-locking type. When two sheets are placed together, a continuous structural joint is formed.

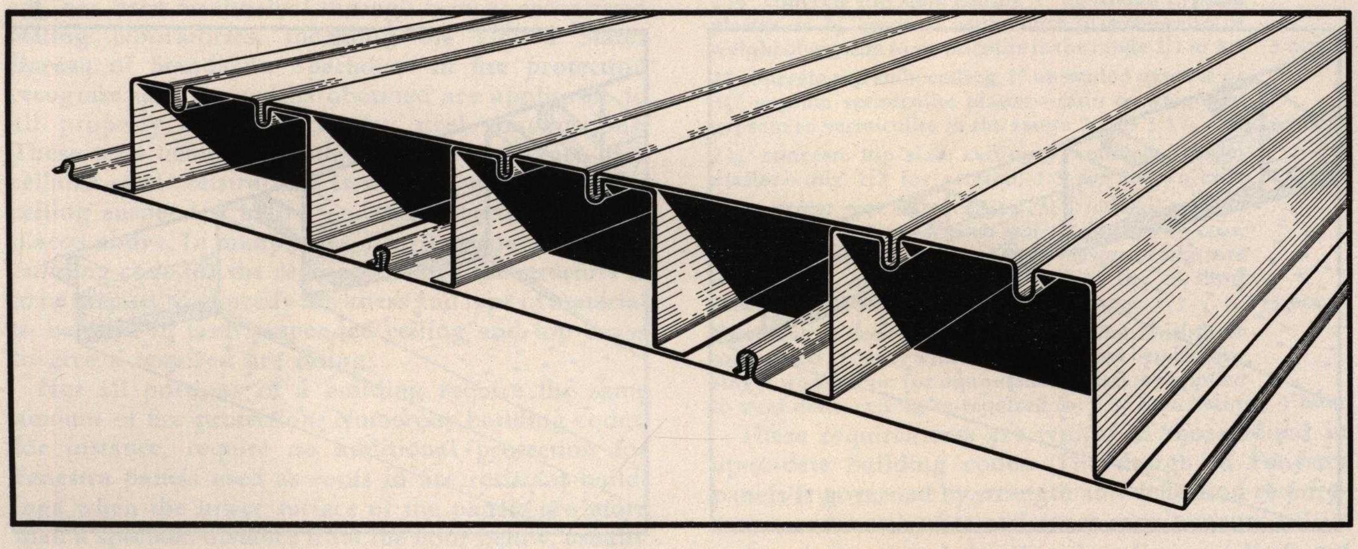
When "D" panels are used as sub-floors, the smooth flat surface can be placed either up or down. When the smooth flat surface is up, it supplies a supporting medium for various types of finishes that can be applied direct. Trowelled-on finishes and various types of wood flooring with mastic can be secured directly to the steel surface. Concrete and other wet fill materials can be poured over the top surface and finished smooth or covered with tile or terrazzo. A wood finish floor can also be obtained by nailing to nailers imbedded in the concrete. Specifications have been developed for the economical application of most types of floor covering to the smooth steel surface of the panel.

When the type "D" panel is placed with the smooth surface down, it provides a finished ceiling for the room underneath if a plastered ceiling is not necessary. The voids between the cellular box beams are usually filled by the application of a layer of concrete that would cover the top surface approximately 2½″. The light weight cellular construction enables the architect and engineer to cut the cost of the structural steel in the building, resulting in over-all economy. Additional saving is gained through elimination of forms and shoring used with all-concrete construction.

If it is desired to attach a ceiling to type "D" panels, the bottom plates can support metal lath or wire mesh for attaching a suspended plaster ceiling (*see page 11*).

The type "D" panel meets the demands of economical construction, which requires that floors be kept as thin as possible. Open space between cells is sufficiently large to allow placement of large pipes and ducts, eliminating need for placing these on top of slabs and increasing slab thickness. Service facilities such as wiring, pipes, ducts, etc., can be installed through cellular portions of the panels.

TYPE "AD" DECK AND FLOOR PANELS



TO MEET the design for a sub-floor requiring two flat surfaces, Fenestra type "AD" panels are provided. The flat top surface offers a complete support for flooring or roofing, while the smooth underside provides a continuous ceiling surface which can be finished by painting. "AD" panels therefore eliminate the necessity of using plaster or other materials to form a finished ceiling. If desired, however, the smooth underside can be covered with ceiling surfacing material for which the flat surface provides a full bonding area.

The type "AD" unit is composed of a flat plate, with male and female joints, to which is spot-welded a formed beam section. This beam section has two longitudinal female joints placed in the flat flange portion. A detachable service cover plate is provided which, when inserted into the longitudinal joints, joins the type "AD" units together into a continuous series of box beams. The panel sections are varied in gage from 16 to 13 in order to enable the units to carry specified floor and roof loads on varying spans. The standard depths are 3″, 4½″, 6″ and 7½″. All widths are standardized at 16″.

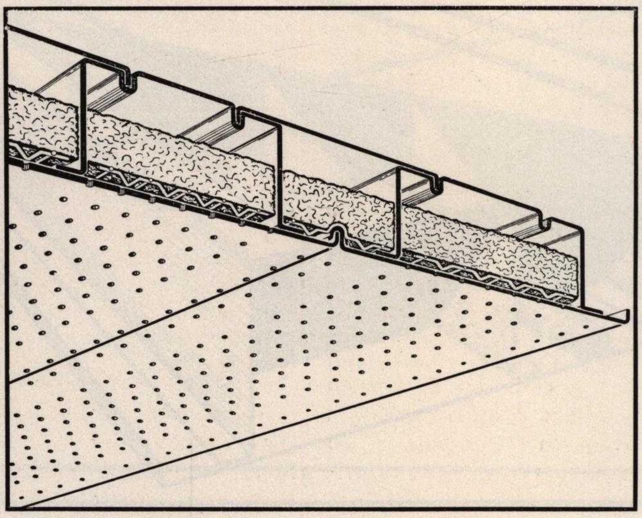
The lower plate of type "AD" panels can be perforated for acoustical treatment (*see page 10*). Interior cells of acoustical panels are filled with sound absorbent material separated from lower plate by wire chairs. Either a finished floor or a roof is placed on the continuous top surface.

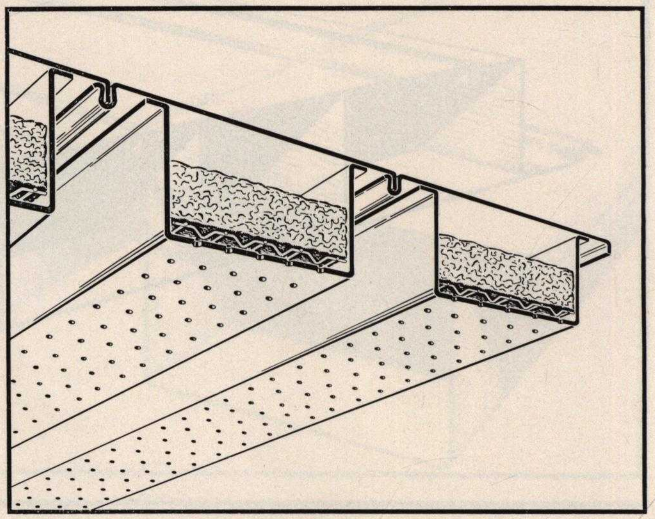
Type "AD" panels are particularly useful for long span roofs. The flat bottom surface, when running from truss to truss, provides a finished ceiling uninterrupted by purlins. The flat top surface provides 100% support for the insulated roof. This long span construction supplies the architect with a new tool for clean interior lines.

"D" AND "AD" PANEL ATTACHMENT METHODS

ATTACHMENT of steel panels is most commonly done by electric arc welding directly to supporting structural steel. Access for placement of welds is through the gap which will be left between butting panels, or by means of setting back the top plate. Access to side of panel can be obtained during erection as panels are placed in position. Ends of "D" panels can be welded to supporting members at the side of beam section, or they can be welded on the flat plate in contact with structural steel. Ends of "AD" panels are welded to supporting members through service cover opening, within 3″ of female joint on bottom plate and adjacent to male joint on the bottom plate. When it is necessary to burn through panels in order to weld to structural steel, a puddle weld through the sheet metal to the structural steel shall be used.

ACOUSTICALLY TREATED "AD" AND "D" PANELS





ACOUSTICAL "AD" PANELS

ACOUSTICALLY treated Fenestra "AD" panels (*above, left*) are formed by perforating the plate section of the panel with 1/8″ round holes so placed that 9.3% open area is provided for the entrance of the sound energy into the sound absorbing medium. The sound absorbing medium is 2″ thick, 2 lb. glass fiber insulation and is supported 1/4″ above the holes by wire chairs. Tests conducted by leading acoustical laboratories prove that Fenestra acoustical "AD" panels have a noise reduction coefficient of 0.75 over the normal frequency range in which acoustical materials are tested.

The Fenestra acoustical "AD" panel provides a combination structural and acoustical unit that is easily and speedily erected. These panels give the additional features of incombustible construction and neat architectural appearance. The perforated metal ceiling needs only the application of a finish coat of paint over the shop primer to present the final completed installation. By combining the function of roof or floor deck, joists, hangers and acoustic ceiling into one packaged panel, erection time is considerably reduced.

Fenestra acoustical "AD" panels find one of their greatest uses in the construction of intermediate floors, with the undersurface of the acoustically treated panel acting as the finished ceiling and the panels themselves acting as the sub-floor for the story above. These structural-acoustical units are finding increased demand as long-span roofs for gymnasiums, theatres, churches, hospitals, public halls, and similar constructions. One novel feature that makes the panels particularly desirable for use in gymnasiums is the panel's resistance to impact from flying objects: being a portion of the complete structural unit, the perforated ceiling cannot loosen and fall away when struck by bounding balls, etc. The Fenestra acoustical "AD" panel is also unique in that it provides an acoustical ceiling in one simple installation, eliminating the necessity of attaching sound absorbing elements after floor and ceiling have been placed.

ACOUSTICAL "D" PANELS

Fenestra acoustical "D" panels (*above, right*) are similar to acoustical "AD" panels. The acoustical "D" panel, however, has only the horizontal portion of the U-shaped beam section perforated with 1/8″ holes. This gives the effect of strip absorption of the sound energy. The 6″ void sections between adjacent panels act as sound deadeners also. Insulation and wire chair arrangements are the same as in "AD" panels.

The advantages of easy, quick erection, incombustibility and neat architectural appearance are maintained. The acoustical "D" panel also needs only a finish coat of paint over the shop primer to give a finished metal ceiling. Cracks, stains, crumbling, ruin of decorations, and expensive repairs are avoided. The panels do not soil easily and can be cleaned with soap and water; for this reason they are ideally suited for hospitals, schools and all places where sanitation is essential.

A comparison of costs that takes into account the completeness offered by Fenestra structural-acoustical units (either "D" or "AD"), their neatness and their freedom from maintenance expense, will show them to be more economical than any collection of elements that would make up into a comparable installation.

PANEL FIRE RESISTANCE RATINGS

THE FIRE resistance of cellular steel construction has been established through tests at recognized testing laboratories, including the United States Bureau of Standards. Specialists in fire protection recognize that the results obtained are applicable to all properly designed cellular steel constructions. These tests demonstrate that the fire resistance of a cellular steel construction is a direct function of the ceiling suspended below and the covering material placed above. In many cases, it will be found that the building code for the region in which the structure is to be erected will specify thickness and type of material to be used in both suspended ceiling and top cover to give a required fire rating.

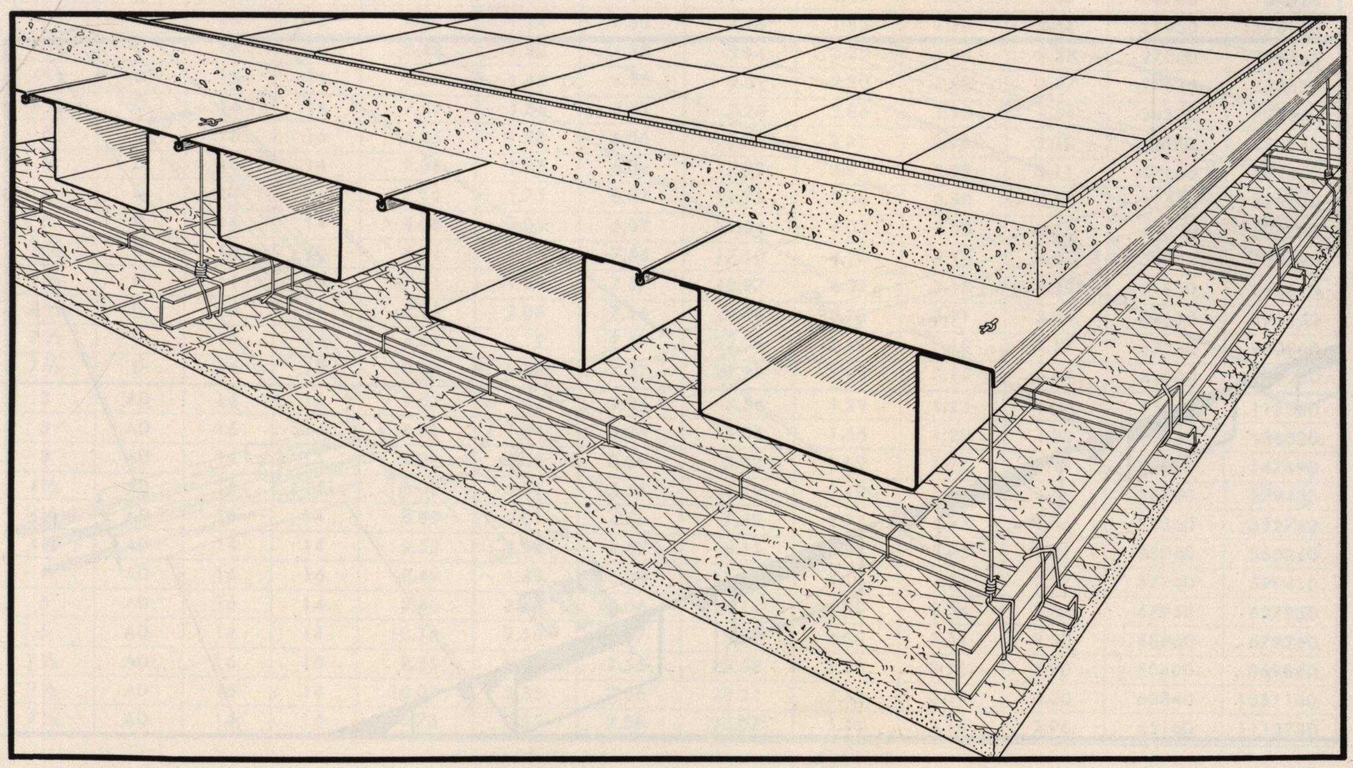
Not all portions of a building require the same amount of fire protection. Numerous building codes, for instance, require no additional protection for Fenestra panels used as roofs in fire resistant buildings when the lower surface of the panels are more than a specified distance from the floor below, usually about 20′. A suspended ceiling is not generally required below Fenestra panels when they are used in buildings outside the fire zones.

A leading regional building code requires the following constructions to give the specified fire ratings to steel floors:

CONSTRUCTION	RATING
2½″ concrete top slab; ceiling 1″ gypsum-vermiculite plaster—ratio or weight of gypsum to vermiculite in the range 2:1 to 3:1	4 hours
2½″ concrete top slab; ceiling 1″ unsanded gypsum plaster or ¾″ gypsum vermiculite plaster—ratio of weight of gypsum to vermiculite in the range 2:1 to 3:1	3 hours
2″ concrete top slab; ceiling 1″ unsanded gypsum or ¾″ gypsum vermiculite plaster—ratio of weight of gypsum to vermiculite in the range 2:1 to 3:1......	2½ hours
2¼″ concrete top slab; ceiling ¾″ sanded gypsum plaster—mix 1:2 for scratch, 1:3 for brown coat	2 hours
2″ concrete top slab; ceiling ¾″ sanded gypsum plaster—mix 1:2 for scratch and 1:3 for brown coat, or ¾″ Portland cement and sand plaster of like mix with 15 lbs. of hydrated lime and 31 lbs. of short asbestos fiber per bag of Portland cement.........	1½ hours
Double wood floor (subfloor ¾″ sheathing, finish floor tongue and groove) with insulating paper between, or single wood floor (or equivalent insulation) applied to steel deck; ceiling as required for 1½ hour rating	1 hour

These requirements are typical of those found in up-to-date building codes. The design of Fenestra panels is governed by strength and deflection requirements and not by fire resistance requirements.

A typical suspended ceiling installation (*illustrated below*) will have runner channels attached to the panels with heavy gage wire. Furring channels are wired to the runners. Expanded metal lath, to receive the plaster, is fastened to the furring channels. A wire mesh should be placed in the concrete slab above the panel, to prevent spalling and to control tension stresses. The Detroit Steel Products Company will furnish details and specifications for standard types of fire resisting construction.



PANEL ELECTRIFICATION

THE UNDERFLOOR electrical duct system is readily adaptable to use over Fenestra panel floors. The flat working surface of the panel construction enables the electrical contractor to easily place and level his ducts. The concrete topping over the panels serves to imbed and cover the duct system. Underfloor electrical duct systems are designed to give full wiring coverage to desks or machines. Greater economy can frequently be obtained through designing the structural floor system solely on the load requirements of the construction, eliminating electrical requirements which may increase the gage required.

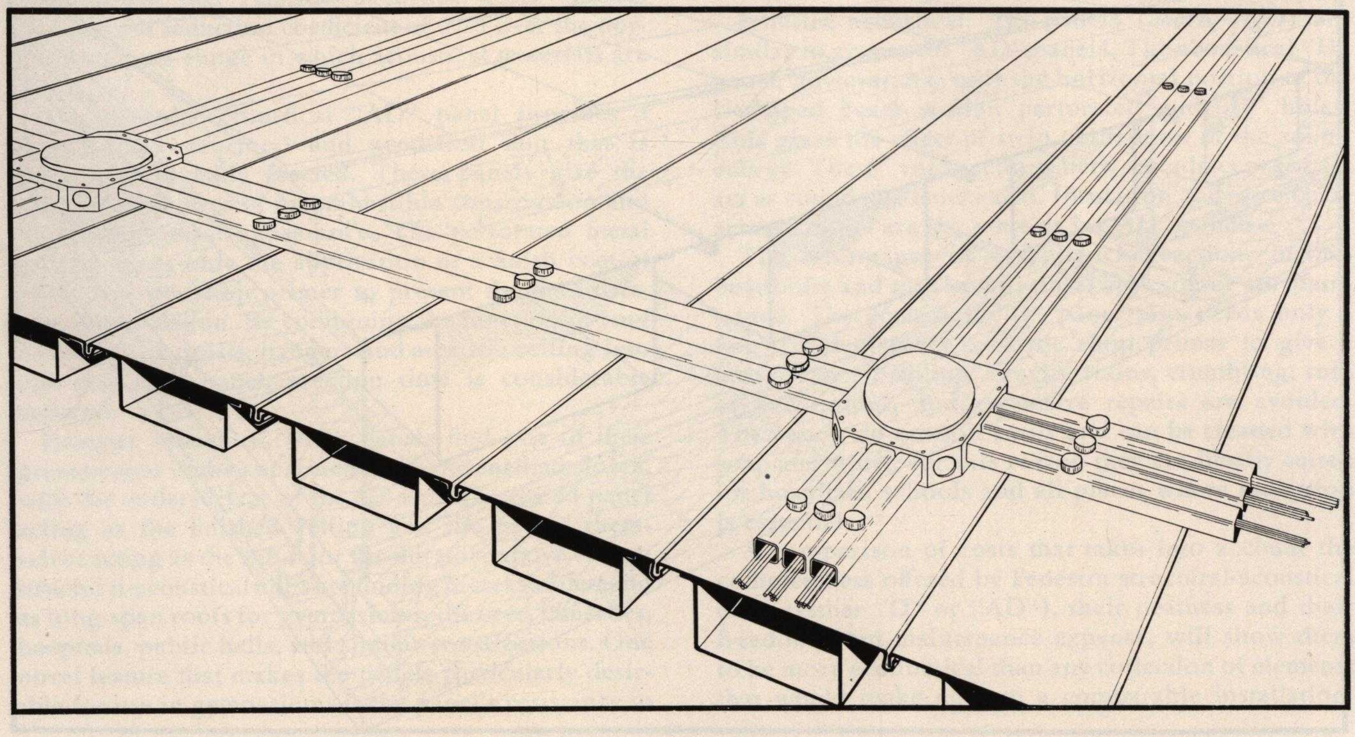
The underfloor distribution system consists of a single or multiple arrangement of rectangular 14-gage steel ducts, junction boxes, and their necessary attachments, installed in the floor of the building for the distribution of electrical wiring. The ducts approximate the capacity of either 1½″ or 2″ conduit and are used as wire raceways. They are spaced longitudinally on 6′ or 8′ centers and are connected by cross ducts spaced about 30′ to 50′. A junction box is located at each duct intersection.

The most common type of underfloor installation is composed of three ducts that run parallel to each other and handle the three typical services: (1) high tension circuits, which are either 110 or 220 volts or both; (2) low tension circuits for intercommunication, loud speakers, buzzers, etc., and (3) telephones.

Electrical ducts are furnished in 10′ lengths, with factory-made inserts every 2′ for both longitudinal and cross duct. An efficient, complete coverage to the wiring of any desk or machine is provided by both the closeness of inserts and by the placement of longitudinal ducts every 6′ or 8′.

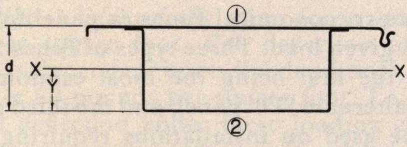
Changes in office or machine layouts can be easily accomplished. It is merely a matter of removing the steel closure cap at the top of the insert, attaching wires to the proper outlet fitting, and locking this fitting into the insert. The old insert is then closed by a brass blanking plate which is also locked into the insert. Marker caps are provided to give the location of the duct line, with a visible marker on each side of partitions and other interfering objects. It is a simple matter to stretch a line between two such markers and, by measuring in increments of 2′, determine the exact location of the desired insert.

Close collaboration has been developed between the Detroit Steel Products Company and the manufacturer of the underfloor wiring system. The engineers of both companies are available for consultation and planning in laying out the system to give maximum efficiency and economy.

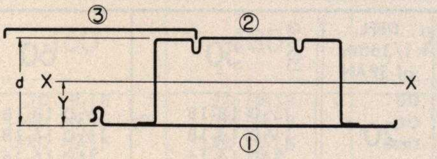


PANEL SECTION PROPERTY TABLE

1. All properties are shown per 12 inch width.
2. Sections are 16 inches wide and of depth and gages indicated in property table. Lengths to suit job requirements.
3. All section properties have been determined by use of American Iron and Steel Institute's Specification for Design of Light Gage Steel Structural Members.
4. Bearing should be a minimum of 3 inches.
5. Allowable total (dead and live) load per square foot is computed by dividing coefficient of strength by span, in feet, squared.
6. Allowable live load per square foot is computed by dividing coefficient of deflection by span, in feet, cubed when 1/360 deflection governs. If 1/250 deflection governs, allowable live load determined above is multiplied by factor 1.44.
7. Nomenclature system quickly describes the gages of component parts of a Fenestra Building Panel. For example, 3D-16-18 is a 3 inch deep, type "D" section composed of (1) 16 gage flat plate and (2) 18 gage beam section.



In the same fashion, 4½ AD-16-14 is a 4½ inches deep, type "AD" section composed of (1) 16 gage flat plate and (2) 14 gage beam section. Service cover (3) is of same gage as beam section, in this case, 14 gage.



SECTION NUMBER				WT. PER SQ. FT.	AREA PER FT.	DEPTH	AXIS X-X				COEFF. OF STRENGTH	COEFF. OF DEFL. L/360
DEPTH	TYPE	GAGE 1	GAGE 2				"I" PER FT.	"S" PER FT.	"R"	"Y"		
				LB.	IN.²	IN.	IN.⁴	IN.³	IN.	IN.	LB./FT.²	LB./FT.²
1½	D	18	18	4.09	.92	1.55	.44	.54	.69	.81	6420	19320
1½	D	16	18	4.65	1.04	1.56	.48	.54	.68	.89	6520	21500
1½	D	16	16	5.07	1.17	1.56	.55	.66	.69	.83	7940	24480
3	D	18	18	4.45	1.03	3.05	1.87	1.15	1.35	1.63	13800	83250
3	D	16	18	5.01	1.15	3.06	2.08	1.16	1.34	1.78	13960	92180
3	D	16	16	5.53	1.30	3.06	2.38	1.43	1.35	1.66	17180	105690
3	D	14	16	6.23	1.48	3.07	2.66	1.46	1.34	1.82	17570	118220
3	D	14	14	6.93	1.69	3.07	3.06	1.78	1.34	1.71	21410	135810
3	D	14	12	8.21	2.06	3.07	3.71	2.40	1.35	1.55	28780	164820
4½	D	18	18	4.82	1.14	4.55	4.46	1.83	1.96	2.44	21950	198180
4½	D	18	16	5.43	1.32	4.55	5.14	2.25	1.98	2.28	27050	228340
4½	D	16	16	5.99	1.44	4.56	5.69	2.30	1.99	2.47	27620	252650
4½	D	14	14	7.51	1.86	4.57	7.28	2.86	1.96	2.54	34370	323640
6	D	16	16	6.45	1.58	6.06	10.54	3.21	2.58	3.28	38570	468330
6	D	16	14	7.37	1.85	6.06	12.23	3.93	2.58	3.11	47160	543450
6	D	14	16	7.15	1.75	6.07	11.71	3.30	2.58	3.55	39560	520040
6	D	14	14	8.08	2.02	6.07	13.54	4.03	2.58	3.36	48320	601470
7½	D	16	16	6.91	1.71	7.56	17.10	4.20	3.16	4.07	50380	759890
7½	D	14	16	7.61	1.89	7.57	18.97	4.32	3.18	4.39	51830	842610
7½	D	16	14	7.95	2.08	7.56	20.06	5.22	3.11	3.84	62630	891250
7½	D	14	14	8.65	2.19	7.57	22.08	5.29	3.18	4.17	63530	980860
7½	D	14	12	10.62	2.76	7.57	27.22	7.09	3.15	3.84	85060	1209250
3	AD	16	16	7.57	1.62	3.06	2.56	1.29	1.25	1.08	15460	113550
3	AD	16	14	8.31	1.84	3.06	3.06	1.66	1.29	1.22	19932	136030
3	AD	14	14	9.01	2.05	3.08	3.32	1.69	1.27	1.11	20280	147490
4½	AD	16	16	8.03	1.76	4.56	6.29	2.19	1.90	1.66	26280	279430
4½	AD	16	14	8.88	2.01	4.56	7.49	2.78	1.93	1.86	33360	332740
4½	AD	14	14	9.58	2.22	4.57	8.11	2.83	1.92	1.71	33940	360240
6	AD	16	16	8.49	1.89	6.06	11.92	3.14	2.51	2.27	37740	599410
6	AD	16	14	9.46	2.18	6.06	14.14	4.00	2.54	2.52	47950	627950
6	AD	14	14	10.16	2.38	6.07	15.29	4.08	2.54	2.33	48960	679260
7½	AD	16	16	8.95	2.03	7.56	19.58	4.20	3.11	2.90	50400	869840
7½	AD	16	14	10.03	2.35	7.56	23.21	5.32	3.14	3.20	63840	1031100
7½	AD	14	14	10.73	2.55	7.58	25.07	5.43	3.14	2.96	65160	1113730

PANEL SELECTION TABLE

THE PANEL Selection Table enables the engineer to select the most economical Fenestra panel for a given span and a given load. Three types of Fenestra panels are listed, the first being the most economical, the second an alternate "D" panel, and the third the "AD" panel to be used on installations requiring two flat surfaces.

The maximum design fiber stress of 18,000 pounds per square inch and the web crippling stress for 3″ bearing will not be exceeded under the conditions shown in this table. For conditions of loading and for spans not covered in the Panel Selection Table, the Fenestra panel that will safely carry the required load may be determined from the Section Properties Table on page 13.

Included in the Panel Selection Table are computed deflections for panels employed on spans over 15′, and for panels employed on spans less than 15′ where computed deflections are greater than 1/360 of the span.

(*Continued on following page*)

SPAN FT.	DEFL. 1/360th of SPAN	LOAD 50	60	70	80	90	100
6′	.20″	1½D 18-18 1½D 16-18 3AD 16-16	1½D 18-18 1½D 16-18 3AD 16-16	1½D 18-18 1½D 16-18 3AD 16-16	1½D 18-18 1½D 16-18 3AD 16-16	1½D 18-18 (.20) 3D 18-18 3AD 16-16	1½D 18-18 (.23) 3D 18-18 3AD 16-16
7′	.23″	1½D 18-18 1½D 16-18 3AD 16-16	1½D 18-18 (.26) 1½D 16-18 3AD 16-16	1½D 18-18 (.30) 3D 18-18 3AD 16-16	1½D 18-18 (.34) 3D 18-18 3AD 16-16	3D 18-18 1½D 16-16 (.30) 3AD 16-16	3D 18-18 1½D 16-16 (.33) 3AD 16-16
8′	.27″	3D 18-18 1½D 16-16 (.28) 3AD 16-16	3D 18-18 1½D 16-16 (.34) 3AD 16-16	3D 18-18 1½D 16-16 (.40) 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16
9′	.30″	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16
10′	.33″	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 (.37) 4½D 18-18 3AD 16-16	3D 18-18 (.41) 4½D 18-18 3AD 16-16
11′	.37″	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 (.42) 4½D 18-18 3AD 16-16	4½D 18-18 3D 16-16 (.38) 3AD 16-16	4½D 18-18 3D 16-16 (.42) 3AD 16-16 (.39)	4½D 18-18 3D 16-16 (.47) 3AD 16-16 (.44)
12′	.40″	3D 18-18 (.42) 4½D 18-18 3AD 16-16	3D 18-18 (.51) 4½D 18-18 3AD 16-16	4½D 18-18 3D 16-16 (.47) 3AD 16-16 (.43)	4½ D 18-18 3D 14-14 (.42) 3AD 16-16 (.50)	4½D 18-18 3D 14-14 (.47) 4½AD 16-16	4½D 18-18 3D 14-14 (.52) 4½AD 16-16
13′	.43″	4½D 18-18 3D 16-16 (.46) 3AD 16-16	4½D 18-18 3D 16-16 (.55) 3AD 16-16 (.49)	4½D 18-18 3D 14-14 (.50) 4½AD 16-16	4½D 18-18 3D 14-12 (.47) 4½AD 16-16	4½D 18-18 (.44) 4½D 18-16 4½AD 16-16	4½D 18-18 (.49) 4½D 18-16 4½AD 16-16
14′	.47″	4½D 18-18 3D 14-14 (.48) 4½AD 16-16	4½D 18-18 3D 14-14 (.58) 4½AD 16-16	4½D 18-16 3D 14-12 (.55) 4½AD 16-16	4½D 18-18 (.53) 4½D 18-16 4½AD 16-16	4½D 18-18 (.59) 4½D 16-16 4½AD 16-16	4½D 16-16 (.52) 6D 16-16 4½AD 16-16
15′	.50″	4½D 18-18 (.43) 3D 14-14 (.63) 4½AD 16-16 (.31)	4½D 18-18 (.52) 4½D 18-16 (.45) 4½AD 16-16 (.37)	4½D 18-18 (.61) 4½D 16-16 (.47) 4½AD 16-16 (.43)	4½D 16-16 (.54) 6D 16-16 (.29) 4½AD 16-16 (.49)	4½D 16-16 (.61) 6D 16-16 (.33) 4½AD 16-16 (.55)	6D 16-16 (.37) 4½D 14-14 (.53) 4½AD 16-16 (.61)
16′	.53″	4½D 18-18 (.56) 4½D 18-16 (.49) 4½AD 16-16 (.40)	4½D 18-16 (.58) 4½D 16-16 (.53) 4½AD 16-16 (.48)	4½D 16-16 (.62) 6D 16-16 (.33) 4½AD 16-16 (.56)	6D 16-16 (.38) 4½D 14-14 (.55) 6AD 16-16 (.34)	6D 16-16 (.43) 4½D 14-14 (.62) 6AD 16-16 (.38)	6D 16-16 (.47) 4½D 14-14 (.69) 6AD 16-16 (.42)
17′	.57″	4½D 18-16 (.62) 4½D 16-16 (.56) 4½AD 16-16 (.51)	6D 16-16 (.36) 4½D 14-14 (.52) 4½AD 16-16 (.61)	6D 16-16 (.42) 4½D 14-14 (.61) 6AD 16-16 (.37)	6D 16-16 (.48) 4½D 14-14 (.70) 6AD 16-16 (.43)	6D 16-16 (.54) 7½D 16-16 (.33) 6AD 16-16 (.48)	6D 16-16 (.60) 7½D 16-16 (.37) 6AD 16-16 (.53)
18′	.60″	6D 16-16 (.38) 4½D 14-14 (.55) 4½AD 16-16 (.64)	6D 16-16 (.46) 4½D 14-14 (.66) 6AD 16-16 (.40)	6D 16-16 (.53) 7½D 16-16 (.33) 6AD 16-16 (.47)	6D 16-16 (.61) 7½D 16-16 (.37) 6AD 16-16 (.54)	6D 16-16 (.68) 7½D 16-16 (.42) 6AD 16-16 (.60)	6D 16-16 (.76) 7½D 16-16 (.47) 6AD 16-16 (.67)
19′	.63″	6D 16-16 (.47) 4½D 14-14 (.68) 6AD 16-16 (.42)	6D 16-16 (.57) 7½D 16-16 (.35) 6AD 16-16 (.50)	6D 16-16 (.66) 7½D 16-16 (.41) 6AD 16-16 (.58)	6D 16-16 (.75) 7½D 16-16 (.46) 6AD 16-16 (.67)	7½D 16-16 (.52) 6D 16-14 (.73) 6AD 16-16 (.75)	7½D 16-16 (.58) 6D 16-14 (.81) 7½AD 16-16 (.51)
20′	.67″	6D 16-16 (.58) 7½D 16-16 (.36) 6AD 16-16 (.51)	6D 16-16 (.69) 7½D 16-16 (.43) 6AD 16-16 (.61)	7½D 16-16 (.50) 6D 16-14 (.70) 6AD 16-16 (.72)	7½D 16-16 (.57) 6D 14-14 (.72) 7½AD 16-16 (.50)	7½D 16-16 (.64) 6D 14-14 (.81) 7½AD 16-16 (.56)	7½D 14-16 (.64) 7½D 16-14 (.61) 7½AD 16-16 (.62)

PANEL SELECTION TABLE (Continued)

The following example will show how the Panel Selection Table is used:

Live load design = 80 pounds per square foot
Dead load design = 40 pounds per square foot
Span = 15 feet

The total load (dead plus live) equals 120 pounds per square foot. To choose the panel strong enough to carry this load, read across the load column to 120 pounds per square foot and down to the 15 foot column to a 6D-16-16 panel, or a 4½D-14-14. Note that the deflection shown for the 4½D-14-14 panel is greater than 1/360 of the span for a load of 120 pounds per square foot. The deflection of a panel, however, is dependent upon live load only, which, in this case, is 80 pounds per square foot. To determine the actual deflection under these loading conditions, find by proportion the deflection X, where X is to 80 as .64 is to 120. X equals .43, which is less than 1/360 of the span. Therefore, the 4½D-14-14 panel is also satisfactory.

SPAN FT.	DEFL. 1/360th of SPAN	LOAD 110	120	140	160	180	200
6′	.20″	1½D 18-18 (.24) 3D 18-18 3AD 16-16	1½D 18-18 (.27) 3D 18-18 3AD 16-16	3D 18-18 1½D 16-16 (.25) 3AD 16-16	3D 18-18 1½D 16-16 (.29) 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16
7′	.23″	3D 18-18 1½D 16-16 (.36) 3AD 16-16	3D 18-18 1½D 16-16 (.40) 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16
8′	.27″	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 (.27) 4½D 18-18 3AD 16-16	3D 18-18 (.30) 4½D 18-18 3AD 16-16	3D 18-18 (.33) 4½D 18-18 3AD 16-16
9′	.30″	3D 18-18 3D 16-18 3AD 16-16	3D 18-18 (.32) 4½D 18-18 3AD 16-16	3D 18-18 (.37) 4½D 18-18 3AD 16-16	4½D 18-18 3D 16-16 (.34) 3AD 16-16 (.31)	4½D 18-18 3D 16-16 (.38) 3AD 16-16 (.35)	4½D 18-18 3D 14-14 (.33) 4½AD 16-16
10′	.33″	4½D 18-18 3D 16-16 (.35) 3AD 16-16	4½D 18-18 3D 16-16 (.38) 3AD 16-16 (.36)	4½D 18-18 3D 14-14 (.35) 3AD 16-16 (.42)	4½D 18-18 3D 14-14 (.40) 4½AD 16-16	4½D 18-18 3D 14-14 (.45) 4½AD 16-16	4½D 18-18 (.34) 4½D 18-16 4½AD 16-16
11′	.37″	4½D 18-18 3D 14-14 (.40) 3AD 16-16 (.48)	4½D 18-18 3D 14-14 (.44) 4½AD 16-16	4½D 18-18 3D 14-14 (.51) 4½AD 16-16	4½D 18-18 (.40) 4½D 18-16 4½AD 16-16	4½D 18-16 (.39) 4½D 16-16 4½AD 16-16	4½D 16-16 (.39) 6D 16-16 4½AD 16-16
12′	.40″	4½D 18-18 3D 14-14 (.57) 4½AD 16-16	4½D 18-18 (.42) 4½D 16-16 4½AD 16-16	4½D 18-18 (.49) 4½D 16-16 4½AD 16-16	4½D 16-16 (.45) 6D 16-16 4½AD 16-16	4½D 16-16 (.50) 6D 16-16 4½AD 16-16 (.45)	6D 16-16 4½D 14-14 (.43) 6AD 16-16
13′	.43″	4½D 18-16 (.47) 4½D 16-16 4½AD 16-16	4½D 16-16 (.46) 6D 16-16 4½AD 16-16	4½D 16-16 (.54) 6D 16-16 4½AD 16-16 (.48)	6D 16-16 4½D 14-14 (.48) 6AD 16-16	6D 16-16 4½D 14-14 (.54) 6AD 16-16	6D 16-16 4½D 14-14 (.60) 6AD 16-16
14′	.47″	4½D 16-16 (.57) 6D 16-16 4½AD 16-16 (.51)	4½D 16-16 (.62) 6D 16-16 4½AD 16-16 (.56)	6D 16-16 4½D 14-14 (.56) 6AD 16-16	6D 16-16 4½D 14-14 (.64) 6AD 16-16	6D 16-16 (.50) 7½D 16-16 6AD 16-16	6D 16-14 (.49) 7½D 16-14 6AD 16-14
15′	.50″	6D 16-16 (.40) 4½D 14-14 (.58) 6AD 16-16 (.36)	6D 16-16 (.44) 4½D 14-14 (.64) 6AD 16-16 (.39)	6D 16-16 (.51) 7½D 16-16 (.32) 6AD 16-16 (.45)	6D 16-16 (.59) 7½D 16-16 (.36) 6AD 16-16 (.52)	7½D 16-16 (.41) 6D 16-14 (.57) 6AD 16-16 (.58)	6D 16-14 (.63) 7½D 16-14 (.39) 7½AD 16-14 (.33)
16′	.53″	6D 16-16 (.52) 7½D 16-16 (.32) 6AD 16-16 (.46)	6D 16-16 (.57) 7½D 16-16 (.35) 6AD 16-16 (.50)	6D 16-16 (.66) 7½D 16-16 (.41) 6AD 16-16 (.59)	7½D 16-16 (.47) 6D 16-14 (.65) 6AD 16-16 (.67)	7½D 16-14 (.45) 6D 14-14 (.66) 7½AD 16-14 (.39)	7½D 16-14 (.50) 6D 14-14 (.74) 7½AD 16-14 (.43)
17′	.57″	6D 16-16 (.66) 7½D 16-16 (.41) 6AD 16-16 (.59)	7½D 16-16 (.45) 6D 14-14 (.56) 7½AD 16-16 (.39)	7½D 16-16 (.52) 6D 14-14 (.66) 7½AD 16-16 (.46)	7½D 16-14 (.51) 6D 14-14 (.75) 7½AD 16-14 (.44)	7½D 16-14 (.57) 7½D 14-14 (.52) 7½AD 16-14 (.49)	7½D 16-14 (.64) 7½D 14-12 (.47) 7½AD 16-14 (.55)
18′	.60″	7½D 16-16 (.51) 6D 14-14 (.65) 7½AD 16-16 (.45)	7½D 16-16 (.56) 6D 14-14 (.71) 7½AD 16-16 (.49)	7½D 16-16 (.65) 7½D 14-16 (.59) 7½AD 16-16 (.57)	7½D 16-14 (.64) 7½D 14-14 (.58) 7½AD 16-14 (.55)	7½D 14-14 (.66) 7½D 14-12 (.53) 7½AD 16-14 (.62)	7½D 14-12 (.59) 7½AD 14-14 (.64)
19′	.63″	7½D 16-16 (.64) 7½D 14-16 (.58) 7½AD 16-16 (.56)	7½D 16-16 (.70) 7½D 14-16 (.63) 7½AD 16-16 (.61)	7½D 16-16 (.81) 7½D 14-12 (.51) 7½AD 16-16 (.71)	7½D 14-14 (.72) 7½D 14-12 (.58) 7½AD 14-14 (.63)	7½D 14-12 (.66) 7½AD 14-14 (.71)	7½D 14-12 (.73)
20′	.67″	7½D 16-14 (.67) 7½D 14-14 (.61) 7½AD 16-16 (.69)	7½D 16-14 (.73) 7½D 14-12 (.54) 7½AD 16-16 (.75)	7½D 16-14 (.85) 7½D 14-12 (.63) 7½AD 14-14 (.68)	7½D 14-14 (.89) 7½AD 14-14 (.78)	7½D 14-12 (.81)	7½D 14-12 (.90)

BUILDING PANEL SPECIFICATIONS

TYPE "C" STEEL WALL PANELS

1. GENERAL—All walls and partitions as noted on plans shall be constructed of Fenestra Type "C" factory insulated steel Building Panels as manufactured by Detroit Steel Products Company.

2. MATERIAL—Panels shall be formed from steel sheets (or from copper bearing steel sheets containing from .20% to .25% copper) of 18 USS gage and 3" depth, designated by nomenclature 3C-18-18.

Insulation shall be of boro-silicate fiberglass type in form of batts of proper dimension to snugly fit thickness and width of panel. Insulation shall be kept dry during storage and panel fabrication.

3. CONSTRUCTION—Panels shall have a covering width of 16" (although full panel width shall be 16¾" to allow for double tongue and groove joint) and when interlocked together shall provide a smooth continuous surface on both sides. Panels shall be factory insulated with specified insulations.

4. SHOP FINISH—After fabrication and before shipment, the panels shall receive a sprayed-on, oven baked coat of gray-green paint designed to protect unexposed surfaces and act as a primer for finished treatments on exposed surfaces.

5. DESIGN—Panels shall be capable of withstanding loads specified on plans without exceeding a maximum fiber stress of 18,000 p.s.i. on actual thickness of metal. For columnar load bearing walls and partitions, the l/r ratio shall not exceed 120. Panel design is to be in accordance with the American Iron and Steel Institute's "Specifications for the Design of Light Gage Steel Structural Members."

6. ERECTION—Panels shall be fastened to framing members by means of welding, bolting, clipping, or metal screwing, as recommended by manufacturer for this particular job. Fastening method shall be clearly shown on manufacturer's erection details. Panels shall be kept dry during shipment and erection.

TYPE "C" ALUMINUM WALL PANELS

1. GENERAL—All walls and partitions as noted on plans shall be constructed of Fenestra Type "C" factory insulated aluminum Building Panels as manufactured by Detroit Steel Products Company.

2. MATERIAL—Panels shall be formed from structural aluminum sheets of 52S ¼H alloy with a minimum yield strength of 26,000 p.s.i., of 16 B & S gage and 3" depth, designated by nomenclature 3C-16AL-16AL.

Insulation shall be of boro-silicate fiberglass type in form of batts of proper dimension to snugly fit thickness and width of panel. Insulation shall be kept dry during storage and panel fabrication.

3. CONSTRUCTION—Panels shall have a covering width of 16" (although full panel width shall be 16¾" to allow for double tongue and groove joint) and when interlocked together shall provide a smooth continuous surface on both sides. Panels shall be factory insulated with specified insulation.

4. DESIGN—Panels shall be capable of withstanding loads specified on plans without exceeding a maximum fiber stress of 13,000 p.s.i. on actual thickness of metal. For columnar load bearing walls and partitions, the l/r ratio shall not exceed 120. Panel design is to be in accordance with sound engineering principles as established for structural light gage products.

5. ERECTION—Panels shall be fastened to framing members by means of extrusions, bolting, clipping, or metal screwing, as recommended by manufacturer for this particular job. Fastening method shall be clearly shown on manufacturer's erection details. Aluminum to steel contact shall be prevented through use of a non-metallic insulating material. Panels shall be kept dry during shipment and erection.

NOTE: A combination panel of aluminum for the exterior surface and steel for the interior surface can be furnished on special order.

TYPE "D" DECK PANELS

1. GENERAL—All floor and roof areas as noted on plans shall be constructed of Fenestra Type "D" Building Panels as manufactured by Detroit Steel Products Company.

2. MATERIAL—The panels shall be Fenestra Type "D", formed from sheet steel of USS gages and depths designated by nomenclature ....

3. CONSTRUCTION—Unit shall be composed of a flat plate with formed longitudinal male and female joints, and a formed "U" plate section, assembled by electric resistance spot-welding in order to provide a structural cellular panel. Side-laps shall be of interlocking type made by inserting male side of sheet into female portion of adjoining sheet and forming a continuous joint. Ends of panels shall be butted and, where construction requires, butt joints shall be covered.

Panels shall have a standard 16" width and shall have one flat and continuous surface.

4. SHOP FINISH—After fabrication and before shipment, the panels shall receive a sprayed-on, oven baked coat of gray-green paint designed to protect unexposed surfaces and act as a primer for finished treatments on exposed surfaces.

5. DESIGN—Building Panel floors and roofs shall be capable of carrying specified total loads with a maximum fiber stress of 18,000 lbs. per square inch on actual thickness of metal. Maximum allowable deflection under live load shall not exceed 1/360th of span length for floors and roofs carrying plastered ceilings, or 1/250th of span length for roofs not supporting plastered ceilings. Design load (dead load, plus live load) shall be taken from contract drawings without allowance for impact unless specified. Panel design is to be in accordance with the American Iron and Steel Institute's "Specifications for the Design of Light Gage Steel Structural Members."

6. ERECTION—All panels shall be laid in strict accordance with manufacturer's instructions and as shown on layout prepared for erector's use. Steel panel unit shall be adjusted in place before being permanently fastened. In accordance with shop details, proper bearing shall be provided on supporting beams. Panels shall be reasonably aligned, end to end, in order to permit registration of cellular portions of unit. Inaccuracies in alignment of level of structural steel should be brought to attention of proper parties and corrected before steel panel construction is finally placed. Steel panels shall be fastened to supporting steel beams by welding. Panels shall have two welds per 16" width of the size and location, as indicated on erection layout. Welds shall be touched up with manufacturer's standard paint.

TYPE "AD" DECK PANELS

Substitute **"AD"** for **"D"** in specifications for **TYPE "D" DECK PANELS.** Also, under **"3. CONSTRUCTION"** substitute the following:

"Unit shall be composed of a flat plate with formed longitudinal male and female joints, and formed "U" plate section with two formed longitudinal female joints in the flange surface, assembled by electric resisting spot-welding in order to provide a structural cellular panel. A service cover shall be supplied to interlock into female joints to complete the flat surface. Side-laps shall be of interlocking type made by inserting male side of sheet into female portion of adjoining sheet and forming a continuous joint. Ends of panels shall be butted and, where construction requires, butt joints shall be covered.

"Panels shall have a standard 16" width and shall have two flat and continuous surfaces."

NOTE: For HOLORIB specifications, see page 24.

BUILDING PANEL SPECIFICATIONS

ACOUSTICAL "AD" DECK PANELS

1. GENERAL—All roof areas noted on plans shall be covered with Fenestra Acoustical Type "AD" Building Panels, as manufactured by Detroit Steel Products Company. Roof units shall have a sound reduction coefficient of not less than 0.75.

2. MATERIAL

a. Acoustical Building Panels—(To be furnished by Detroit Steel Products Company and installed by Deck Erector.) Panels shall be Fenestra Type "AD", formed from sheet steel of USS .... gage and .... depth, designated by nomenclature........ with a perforated bottom plate of .... gage, formed beam member of .... gage, and a standard service cover of 16 gage, using not less than .... lbs. per sq. ft. of steel for finished roof, not including weight of paint or accessories.

b. Sound Absorbing Element—Sound absorbing elements shall be 2″ thick, 2 lb. density Fiberglas insulation, coated one side.

c. Insulation—Insulation shall consist of not less than 1″ of rigid roof insulation (to be provided under Built-up Roofing Specifications).

d. Waterproofing—Waterproofing shall be 20 year bonded built-up roofing.

3. CONSTRUCTION—Units shall be composed of a flat perforated plate with formed longitudinal male and female joints and a formed "U" plate beam section, with two formed longitudinal female joints in flange surface, assembled by electric resistance spot-welding in order to provide a structural cellular panel. Side-laps shall be of interlocking type made by inserting male side of sheet into female portion of adjoining sheet and forming a continuous joint. Ends of panels shall be butted and, where construction requires, butt joints shall be covered. A service cover shall be supplied to interlock into female joints of formed "U" plate beam section to complete the top flat surface. Panels shall have a standard 16″ width and shall have two flat and continuous surfaces upon assembly. The flat bottom sheet shall be perforated with 1/8″ diameter holes, spaced 25/64″ on center (about 946 to the sq. ft.) and shall form a virtually flat surface to support sound absorbing element.

4. SHOP FINISH—After fabrication and before shipment, the panels shall receive a sprayed-on oven-baked coat of gray-green rust inhibitive paint designed to protect interior surfaces and act as a primer for finished treatments on exposed surfaces.

5. DESIGN—The acoustical building panel roof shall be capable of carrying the specified total loads over designed spans, not exceeding a maximum fiber stress of 18,000 p. s. i. on actual thickness of metal. Maximum allowable deflection under the live load shall not exceed 1/250th of the span length. Design load (dead load plus live load) shall be taken from contract drawings without allowance for impact. Panel design is to be in accordance with sound engineering principles as established for structural sheet steel products.

6. ERECTION

a. Acoustical Roof Panels—(To be installed by Deck Erector.) All panels shall be laid in strict accordance with manufacturer's instructions and as shown on blueprint copy of layout prepared for erector's use. The panel shall be welded to structural steel by means of electric arc welding. Before welding, all panels shall be properly spaced with a service cover, and shall be reasonably aligned, end to end, in order to permit registration. Inaccuracies in alignment of level of structural steel shall be brought to the attention of proper parties, and corrected by others before steel panel construction is finally placed. Welds shall be spaced 8″ on center, two welds per panel, at butt joints. Longitudinal joints between integral parts of panels shall be fastened by welding at intervals not exceeding four feet, with the weld having an effective length of approximately 1″. All welds shall be sound and, when cooled, shall be touched up with manufacturer's standard paint. Cover plates shall be welded in place by erector after he has inserted sound absorbing elements, and after electrical contractor has placed all necessary wiring. Electrical contractor must check with the roofer and the building panel erector for progression of work, in order that he may place necessary wiring in panels at the time of erection and not retard the work of the other two contractors.

b. Sound Absorbing Element—(To be furnished by Detroit Steel Products Company and installed by Deck Erector.) Sound absorbing element shall be placed on special wire chair supports furnished by Detroit Steel Products Company and shall be inserted, coated side down, into the building panel at the job site. Closed sections of the building panels shall be filled with sound absorbing elements before panels are finally placed and welded to structural supports. Voids between closed sections shall be filled with sound absorbing elements after panels are in place and before cover plates are welded down.

c. Waterproofing—(To be furnished and installed by Built-up Roofing Contractor.) Built-up roofing shall be mopped to insulation in accordance with manufacturer's instructions.

ACOUSTICAL "D" DECK PANELS

Substitute **"D"** for **"AD"** in specifications for **ACOUSTICAL "AD" DECK PANELS.**

Under **"2. MATERIAL"** omit the words "and a standard service cover of 16 gage."

Under **"3. CONSTRUCTION"** substitute the following:

"Units shall be composed of a flat plate with formed longitudinal male and female joints, and a formed 'U' plate beam section, assembled by electric resistance spot-welding to provide a structural cellular panel. Side-laps shall be of interlocking type made by inserting male side of sheet into female portions of adjoining sheet and forming a continuous joint. Ends of panels shall be butted and, where construction requires, butt joints shall be covered. Panels shall have a standard 16″ width and shall have one flat and continuous surface. The flat bottom of the 'U' plate beam section shall be perforated with 1/8″ diameter holes, spaced 25/64″ on center (about 946 holes to the square foot).'

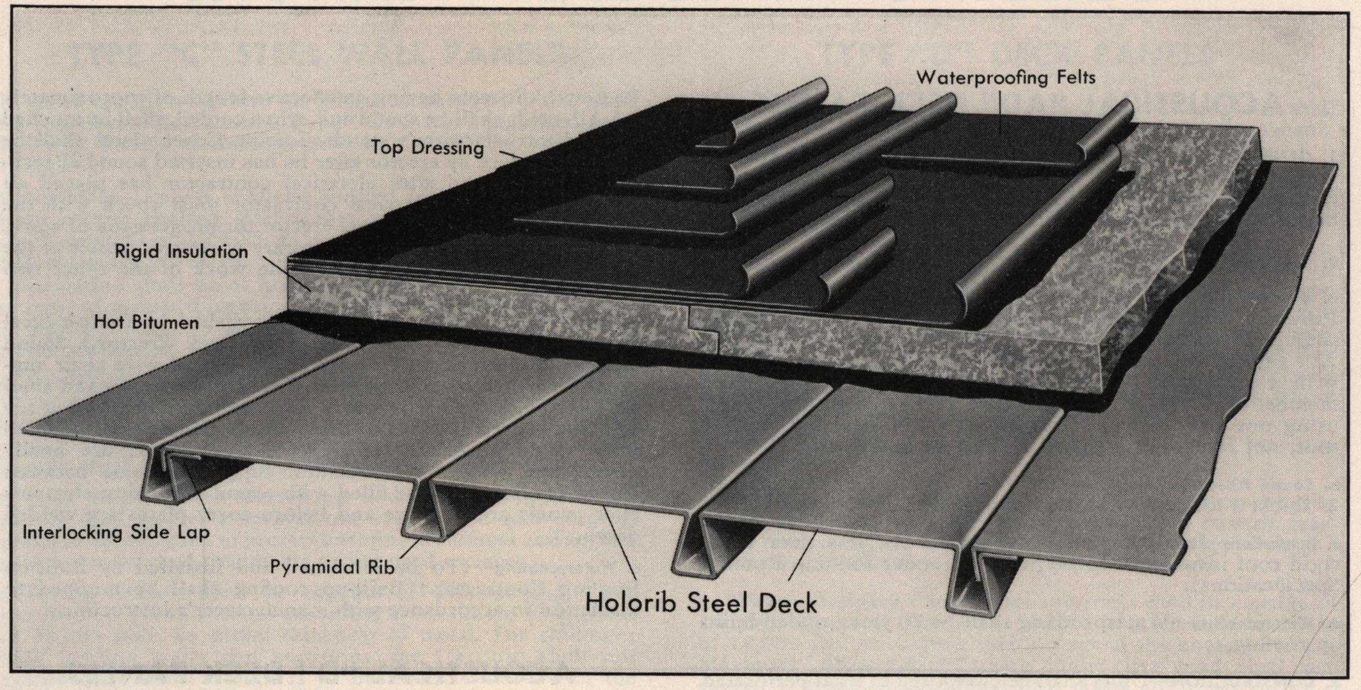
Under **"6. ERECTION"** substitute the following:

"a. Acoustical Roof Panels—(To be installed by Deck Erector.) All panels shall be laid in strict accordance with manufacturer's instructions as shown on blueprint copy of layout prepared for erector's use.

"The panel shall be welded to structural steel by means of electric arc welding. Before welding, all panels shall be reasonably aligned, end to end, in order to permit registration. Inaccuracies in alignment of level of structural steel shall be brought to the attention of proper parties and corrected by others before steel panel construction is finally placed. Welds shall be spaced 8″ on center, two welds per panel at butt joints. Longitudinal joints between integral parts of panels shall be fastened by welding at intervals not exceeding four feet, with the weld having an effective length of approximately 1″. All welds shall be sound and, when cooled, shall be touched up with manufacturer's standard paint.

"b. Sound Absorbing Element—(To be furnished by Detroit Steel Products Company and installed by Deck Erector.) Sound absorbing element shall be placed on special wire chair supports furnished by Detroit Steel Products Company and shall be inserted, coated side down, into the building panel at the job site. Closed sections of the building panels shall be filled with sound absorbing elements before panels are finally placed and welded to structural supports."

HOLORIB STEEL DECK



HOLORIB Steel Deck is a light-weight, smooth-surfaced roof sheathing of exceptional strength and durability, adaptable to every sort of roof, and offering economy of first cost and maintenance. Its efficiency has been proved in long, wide use in industrial and commercial structures, schools, hospitals and public buildings.

Holorib is made of 18- or 20-gage plain or copper-bearing steel (other gages available on special order), in sheets 18″ wide and as long as required for multiple purlin spacings up to 24′. Each sheet is self-reinforced by three ribs, which run lengthwise of the sheet, spaced on 6″ centers. The unique construction of these ribs accounts for Holorib's exceptional rigidity—*their pyramidal shape provides much greater vertical and lateral stability than ordinary steel deck ribs.*

When Holorib sheets are erected, the broad, flat bases of the ribs rest firmly on the purlins, to which they are attached. Complete ribs at side-laps assure equal strength at all points.

Holorib sheets are used for all types and shapes of roof structures. Employed as roof sheathing, the smooth Holorib surface is covered with any desired thickness of pressure-resisting insulation, which, in turn, is waterproofed. If architectural treatment is desired, this complete, insulated roof may be finished with slate, tile or shingles.

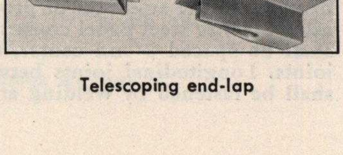
First cost of Holorib Steel Deck is usually less than other types of construction offering comparable advantages. Its lighter weight often permits economies in structural support requirements. Its ease of erection assures savings in time and material. Primed at the factory with a spray coat of paint, oven-baked, Holorib comes to the job prepared for quick, economical finish painting.

TELESCOPING END-LAP, INTERLOCKING SIDE-LAP

AT one end of each Holorib sheet the ribs are crimped to "telescope" into ribs of the adjoining sheet. This exclusive end-lap feature leaves all ribs complete and at virtually full strength. It affords protection against dripping asphalt. Standard end-lap length is 2½″, but this may be longer or shorter to allow for job conditions. All end-laps occur over purlins.

One edge of each Holorib sheet is turned down to form a 1″ deep "barge strip" that interlocks with the outside rib of the adjacent sheet. This outside rib is *complete,* assuring equal strength throughout the deck, and is designed to equalize the level of the two sheets. The resulting side-lap is smooth and permanent; allows the Holorib to conform to movements of material above it; requires no side-lap clips.

Interlocking side-lap


Telescoping end-lap

HOLORIB STEEL DECK

EASILY ATTACHED BY WELDING

HOLORIB Steel Deck is erected after walls and structural steel are in place. Complete erection instructions and a thoroughly engineered roof diagram are prepared by Holorib engineers for every job, thus assuring maximum ease and speed of erection.

The deck may be attached either by welding or by clipping—both methods designed to provide permanent, secure attachment and to insure uplift resistance in accordance with requirements of insurance underwriters. And both methods assure the speed of erection so essential in today's building.

Welding Holorib directly to purlins is the standard method of attachment where facilities permit, on both large and small operations. Welding offers numerous advantages—strong, rigid attachment, adaptability to most roof conditions, pleasing finished appearance. It increases the stability of the deck, and the Holorib welding procedure, utilizing the side rib base, retains the roof flexibility necessary to allow for expansion and contraction of materials.

COMPLETE INSULATED ROOF

A GOOD roof should be designed to protect its owner against three costly forms of waste:

1—Leakage of water from outside.
2—Leakage of heat from inside.
3—Leakage of maintenance dollars.

The Holorib complete insulated roof is designed for this threefold protection. The roof consists of three elements:

1—*The base,* strong, durable Holorib Steel Deck.
2—*The middle stratum,* composed of pressure-resisting insulation.
3—*The outer surface*—a long-lasting waterproofing.

VALUE OF GOOD INSULATION

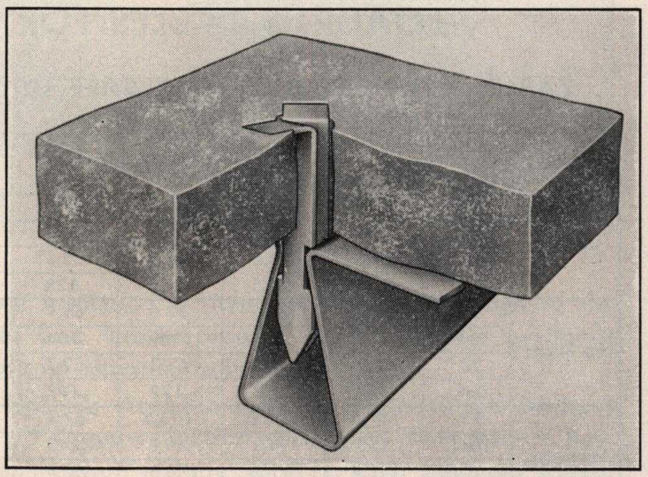
INSULATION, applied to Holorib Steel Deck, particularly as part of the Holorib Complete Roof, effectively retards passage of heat through the roof in either direction. This results in important advantages:

1—Savings in fuel expense.
2—Cooler interiors in summer.
3—Prevention of condensation.

Best results are obtained from pressure-resisting insulation. The amount needed to provide adequate protection can easily be calculated, whatever the building's temperature and humidities.

This type of insulation is easily applied, and it should function for the life of the building if moisture is prevented from condensing within it. For this reason proper *vapor-proofing* of its *inside surface* is most important. If probable differences between inside and outside temperatures are to be average, a single, full mopping of asphalt on the deck is usually a sufficient vapor seal. If these differences are to be above average, the *back side* of the insulation should also be mopped, while in extreme case, one or more plies of roofing felt should be mopped down in hot asphalt before insulation is laid.

Ordinarily, this asphalt mopping is sufficient to hold insulation in place, but on roofs steeply pitched or exposed to high winds, insulation can be additionally anchored with Holorib Insulation Fasteners (*as pictured below*).



Holorib Insulation Fastener in place

IMPORTANCE OF WATERPROOFING

WATERPROOFING is one of the most vital elements in roof construction, for its function is to protect the building and its contents from the elements.

Most approved types of roof coverings may be used with the Holorib Complete Insulated Roof. The types generally employed may be divided as follows:

1. Built-Up Waterproofing—Suitable for all buildings where architectural effect is not required. There are three general groups in this classification:

(a) *Asbestos Felt and Asphalt Smooth Surface Roofs.*

(b) *Rag Felt and Tar (or Asphalt) Roofs, with Slag or Gravel Surface.*

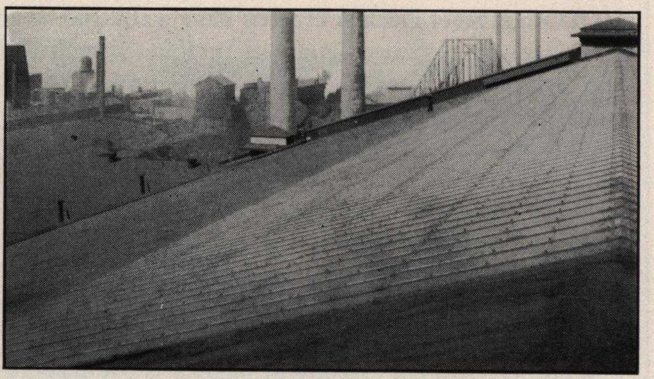
(c) *Rag Felt and Asphalt Smooth Surface Roofs.*

2. Shingles, Slate and Tile—Suitable for steep, pitched roofs; widely used where architectural effect as well as function is a consideration.

A "LIFETIME" HOLORIB ROOF

THERE are numerous ways of building a roof that will keep the weather out and the heat in—for a while! Vital test of a *good* roof, however, is *how long* it will continue to do these things. Many elements conspire to break down roof structures, often in a short time. The Holorib Insulated Roof was developed with this problem specifically in mind. Holorib Roofs last . . .

In 1919 three and a half acres of steel deck, with insulation and waterproofing, were applied to Industrial Brown Hoist Company's plant in Cleveland (*right*). Since its erection this roof has taken the most violent punishment. Acrid locomotive fumes on the inside of the building, blazing heat from the sun, severe lake region storms, rain, sleet, snow and ice attacked it—but the roof is still as good as new!



LOADING TABLES FOR HOLORIB STEEL ROOF DECK

TABLE I. STRESS GOVERNING SAFE UNIFORM LOAD IN LBS. PER SQ. FT. (fs = 18,000)

Type of Span	Gage	5′ 0″	5′ 6″	6′ 0″	6′ 6″	7′ 0″	7′ 6″	8′ 0″	8′ 6″	9′ 0″	9′ 6″	10′ 0″
Simple	18	118.0	97.6	82.0	69.9	60.2*	52.5*	46.1*	40.9*	36.4*	32.7*	29.5*
	Def.	.200	.240	.281	.324	.369	.416	.463	.511	.557	.605	.650
	20	88.3	73.0	61.3	52.3*	45.1*	39.3*	34.5*	30.6*	27.3*	24.5*	22.1*
	Def.	.206	.245	.286	.328	.371	.415	.457	.500	.541	.579	.613
Two Spans	18	118.0	97.6	82.0	69.9	60.2	52.5	46.1	40.9	36.4	32.7	29.5
	Def.	.120	.144	.169	.194	.221	.250	.278	.307	.334	.363	.390
	20	88.3	73.0	61.3	52.3	45.1	39.3	34.5	30.6	27.3	24.5	22.1
	Def.	.124	.147	.172	.197	.223	.249	.274	.300	.325	.347	.368
Continuous	18	147.5	122.0	102.5	87.4	75.3	65.6	57.6	51.1	45.5	40.9	36.9
	Def.	.150	.180	.211	.243	.277	.312	.347	.383	.418	.454	.487
	20	110.4	91.3	76.6	65.4	56.4	49.1	43.1	38.3	34.1	30.6	27.6
	Def.	.154	.184	.214	.246	.278	.311	.343	.375	.406	.434	.460

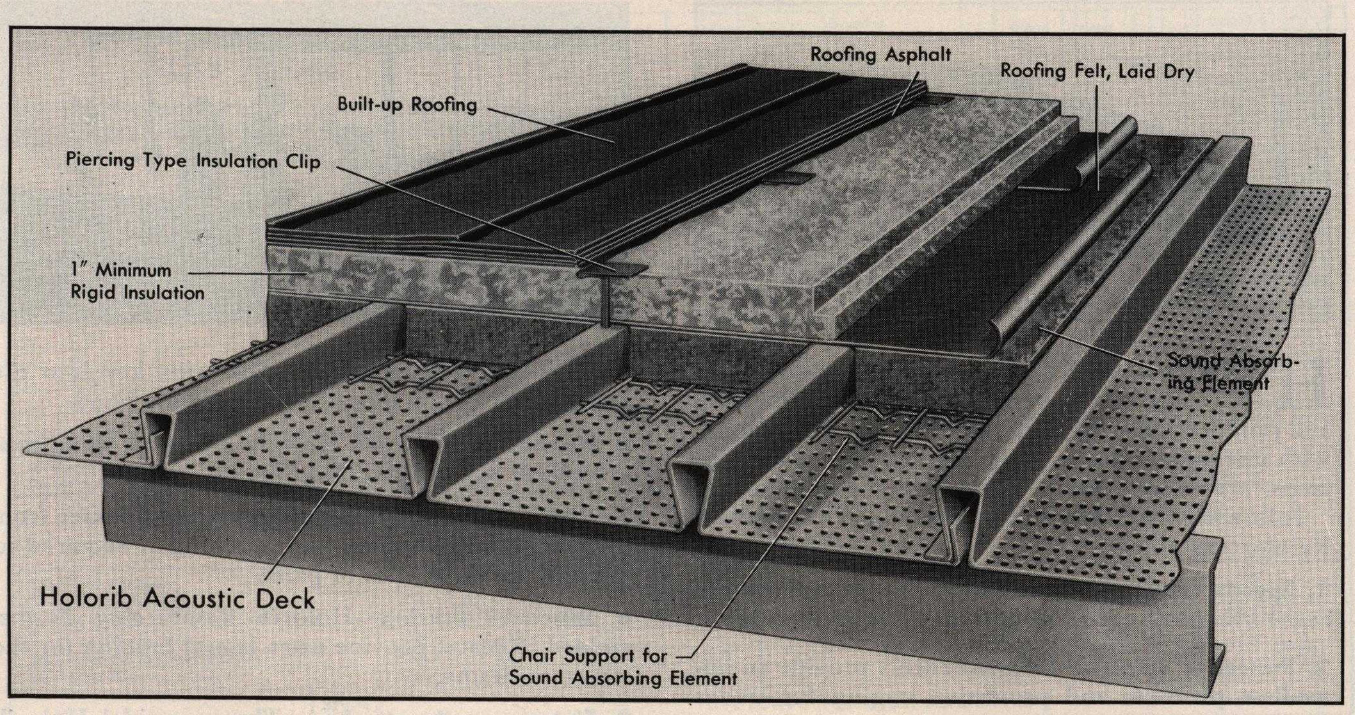
Loads are based on a governing design stress of 18,000 p.s.i. Deflection will exceed 1/240 of the span in cases marked with an asterisk. All deflections are due to live loads only. A 7 pound dead load representing weight of insulation, roofing, etc., was subtracted from total loads when determining deflections.

TABLE II. DEFLECTION OF 1/240TH SPAN GOVERNING—UNIFORM LOAD IN LBS. PER SQ. FT. (fs = 18,000)

Type of Span	Gage	5′ 0″	5′ 6″	6′ 0″	6′ 6″	7′ 0″	7′ 6″	8′ 0″	8′ 6″	9′ 0″	9′ 6″	10′ 0″
Simple	18	118.0	97.6	82.0	69.9	57.3	47.9	40.7	35.1	30.7	27.1	24.2
	20	88.3	73.0	61.3	51.6	42.8	36.1	31.0	27.0	23.9	21.3	19.2
Two Spans	18	118.0	97.6	82.0	69.9	60.2	52.5	46.1	40.9	36.4	32.7	29.5
	20	88.3	73.0	61.3	52.3	45.1	39.3	34.5	30.6	27.3	24.5	22.1
Continuous	18	147.5	122.0	102.5	87.4	75.3	65.6	57.6	51.1	45.5	40.9	36.9
	20	110.4	91.3	76.6	65.4	56.4	49.1	43.1	38.3	34.1	30.6	27.6

Safe uniform loads are total loads in pounds per square foot and include weight of deck and insulation. None of the loads will produce deflections greater than 1/240 of the span; nor will they produce a stress greater than 18,000 p.s.i. In accordance with specifications of the Metal Roof Deck Technical Institute, only 3/4ths of the top compression flange for 18 gage, and 5/8ths for 20 gage, have been used as being effective in resisting bending.

HOLORIB ACOUSTIC ROOFS


Roofing Asphalt
Roofing Felt, Laid Dry
Built-up Roofing
Piercing Type Insulation Clip
1" Minimum Rigid Insulation
Sound Absorbing Element
Holorib Acoustic Deck
Chair Support for Sound Absorbing Element

THE science of proper sound control has, in today's building, a place fully as important as heating, lighting and ventilation. Morever, sound control is equally definite as to results. It is as unnecessary to work in a babel of confusing, efficiency-wrecking noise as to work in an underheated building—and with Acoustic Holorib, proper sound control can be effected with a minimum of expense.

Holorib Acoustic Roofs, developed in cooperation with acoustical engineers, combine four elements in one unit—(1) Perforated Holorib Steel Deck, which provides an attractive metal-faced interior ceiling; (2) Sound-absorbing element; (3) Efficient heat insulation; (4) Waterproofing surface exposed to the weather.

Acoustic Roofs are widely used in theaters, auditoriums, gymnasiums, churches, offices and factory buildings—in all sorts of structures where suspended ceilings can be omitted.

18-gage Holorib Steel Deck, with the area between ribs perforated, is applied with the flat side exposed as a ceiling. A specially prepared sound absorbing element, supported between the ribs and held away from the surface of the deck, forms, with the perforated deck, an ideal sound-absorbing medium.

A ply of roofing is laid (dry) over the tops of the exposed ribs and sound absorbing element, to form a vapor seal and asphalt stop. An inch or more of rigid roof insulation is then mechanically fastened to the ribs and weatherproofed by the highest grade of built-up asbestos roofing.

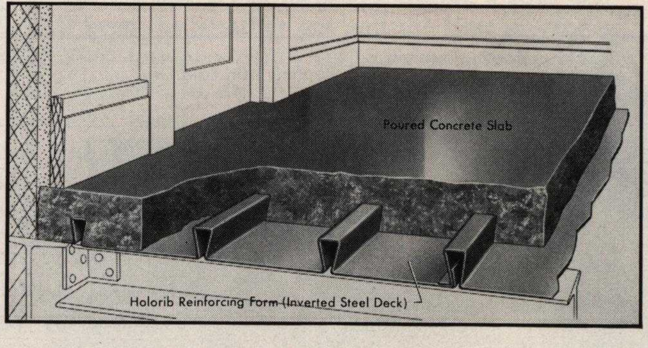
Holorib Acoustic Roofs are guaranteed to have a .75 sound reduction coefficient. They have a heat transmission of only .15 BTU's per hour per square foot per degree of temperature difference. And they provide this high degree of sound quieting and heat-stop value at a cost far below that of similar combinations of materials of equal efficiency.

Acoustic Holorib offers, too, all the advantages of steel roof deck construction common to standard Holorib Roofs. The Acoustic Deck is, like standard Holorib, applied with maximum savings in time and labor. It is supplied in proper lengths to make end laps over purlins; it is easily welded to structural steel members, nailed to wood rafters or purlins.

Acoustic Roofs are unique among sound control structures in this important respect—*the metal-faced ceiling can be washed or painted at any time and as often as desired without impairing acoustical efficiency.*

Acoustic Deck is perforated with ⅛ inch round holes (about 946 to the square foot), staggered $\frac{25}{64}$ inches on center. This forms a pleasing and effective pattern of equilateral triangles in the flat portions of the deck between the straight longitudinal lines of the ribs.

HOLORIB REINFORCING FLOOR FORMS



HOLORIB Steel Deck, with pyramidal ribs turned up, is an effective, permanent, combination form and reinforcement for concrete slabs. It is widely used, with unqualified success, for concrete floors, balcony steps, arena seats, stair wells, pipe ducts, trenches.

Following are some of the advantages of Holorib Reinforcing Forms—

1. Speeds contruction—Forms can be erected for the *entire structure* as soon as steel framework is in place.

2. Protective staging—Holorib Forms provide an immediate platform and protective staging for trades placing conduits, pipe lines, etc.

3. Internal reinforcing—Holorib Forms usually provide all necessary reinforcing—cost of extra material and labor for setting it is thus saved.

4. Attractive appearance—Where plastered ceilings are not required, the smooth steel Holorib surface forms an attractive, economical ceiling.

5. Keys into concrete—Pyramidal ribs key into the concrete slab, form a positive reinforcing bond.

6. No dripping—Tight Holorib joints prevent concrete from dripping to lower floors.

7. Steel kept clean—Structural steel is kept free from drippings; less scraping and brushing is required to prepare for finish coat of paint.

8. Structural bracing—Holorib Reinforcing Forms, welded in place, provide extra lateral bracing for the structural frame.

9. Fixtures easily attached—The pyramidal Holorib ribs, slightly open at bottom, provide dovetail slots for reception of Holorib Hangers.

10. Overall economy—Considering the savings in labor, reinforcing material and time—plus the limited "reusability" of ordinary, removable forms—Holorib Reinforcing Forms, with all their advantages, usually cost less than any other type of concrete slab form.

HOLORIB REINFORCING FLOOR FORMS—ENGINEERING DATA

THE ASSUMPTIONS used to develop Tables III and IV (see opposite page) are on the conservative side and have been substantiated by test. The design factors used in the development of the computations, which are based on standard engineering formulas, are as follows:

$f_c = 800\#/\text{sq. in.}$
$f_s = 14{,}000\#/\text{sq. in.}$
$E_c = 2{,}250{,}000$
$E_s = 27{,}000{,}000$
$n = 12$
A_s = Cross section of rib only

Allowable steel and concrete stresses will be higher in normal construction work, thereby increasing the factor of safety. A reduced steel stress is used in the design in view of the use of sheet steel for part or all of the reinforcing. As an additional conservative approach, only the rib of the Holorib sheet is considered as reinforcing, although tests indicate there is a definite value for the flat sheet between ribs. Also, the beam action of the Holorib, which supports the wet concrete during construction, is not considered in the finished slab.

All computations are based on a $1/8$ simple span bending moment coefficient. As is standard practice in reinforced concrete design, a 1/12 coefficient can be used if negative moment reinforcing is provided at top of slab over bearing points. Additional dead loads such as ceilings, conduits, etc., must be deducted to determine final live load. Weight of concrete slab has already been subtracted to obtain values shown.

Table IV indicates the amount of reinforcing required, in addition to the Holorib, to afford equal strength in both tension and compression with the corresponding allowable live load. Therefore, the loads carried by the different gages are the same but require more reinforcing with 20-gage Holorib than with 18-gage.

Standard shop paint is applied for protection during transit and construction. Tests prove that the pyramidal ribs of Holorib interlock into the concrete and that the painted Holorib sheet has sufficient bond to develop carrying capacities shown.

TABLE I. RECOMMENDED MAXIMUM CONSTRUCTION CLEAR SPANS FOR HOLORIB CONCRETE SLAB FORMS

(No temporary shoring needed)

Thickness of Concrete	Length of Clear Span	
	20-Ga. Holorib	18-Ga. Holorib
2½"	5' 0"	6' 0"
3"	5' 0"	6' 0"
3½"	4' 6"	5' 6"
4"	4' 6"	5' 6"
4½"	4' 6"	5' 6"
5"	4' 6"	5' 6"
5½"	4' 0"	5' 0"
6"	4' 0"	5' 0"
6½"	4' 0"	5' 0"
7"	4' 0"	5' 0"

Note that these are *clear spans* and, in most cases, will permit beam spacing 6 in. greater than figures given above, in consideration of beam flange widths. If longer spans are to be used, temporary shoring is required until concrete is set.

TABLE II. AREA (Square Inches per Foot of Width) FOR VARIOUS SPACINGS OF WIRE, RODS AND BARS

WIRE

Gage A, S&W	Diam. (In.)	Area (Sq. In.)	Spacing		
			3"	4"	6"
6-0	.4615	.16728	.669	.502	.335
5-0	.4305	.14556	.582	.437	.291
4-0	.3938	.12180	.487	.365	.244
3-0	.3625	.10321	.413	.310	.206
2-0	.3310	.08605	.344	.258	.172
0	.3065	.07378	.295	.221	.148
1	.2830	.06290	.252	.189	.126
2	.2625	.05411	.217	.162	.108
3	.2437	.04664	.187	.140	.093
4	.2253	.03986	.160	.120	.080
5	.2070	.03365	.135	.101	.067
6	.1920	.02895	.116	.087	.058
7	.1770	.02460	.098	.074	.049
8	.1620	.02061	.082	.062	.041
9	.1483	.01727	.069	.052	.035
10	.1350	.01431	.057	.043	.029
11	.1205	.01140	.045	.034	.023
12	.1055	.00874	.035	.026	.017
13	.0915	.00657	.027	.020	.013
14	.0800	.00502	.020	.015	.010

RODS AND BARS

Diam. (In.)	Area (Sq. In.)	Spacing		
		3"	4"	6"
1/16	.0031	.012	.009	.006
1/8	.0123	.049	.037	.024
3/16	.0276	.110	.083	.055
1/4	.0491	.196	.147	.098
5/16	.0767	.307	.230	.153
3/8	.1105	.442	.331	.221
7/16	.1503	.601	.451	.300
1/2	.1963	.785	.589	.392
9/16	.2485	.994	.745	.497
5/8	.3068	1.227	.920	.613
11/16	.3712	1.485	1.113	.742
3/4	.4418	1.767	1.325	.883
13/16	.5185	2.074	1.555	1.037
7/8	.6013	2.405	1.804	1.202
15/16	.6903	2.761	2.071	1.380
1	.7854	3.141	2.356	1.571

Effective reinforcing area of Holorib Forms per foot of slab width:

20 Gage—.2944 Sq. In.
18 Gage—.3920 Sq. In.

TABLE III. ALLOWABLE LIVE LOADS FOR HOLORIB CONCRETE SLAB FORMS *WITHOUT ADDITIONAL REINFORCING*

Total Slab Thickness	2½"		3"		3½"		4"		4½"	
Effective Slab Thickness	1.56"		2.06"		2.56"		3.06"		3.56"	
Weight of Slab per Square Foot	31.25#		37.50#		43.75#		50.00#		56.25#	
Gage of Holorib Form	20	18	20	18	20	18	20	18	20	18
Mc—Concrete Resisting Moment	4,468	4,841	7,163	7,809	10,344	11,294	13,866	15,289	17,739	19,691
Ms—Steel Resisting Moment	5,317	6,969	7,145	9,373	9,010	11,754	10,847	14,234	12,713	16,716
SPAN	LIVE LOADS (Pounds per Square Foot)									
3' 0"	300	327	491	540	623	792	753	1004	886	1182
3' 6"	212	232	351	387	446	570	540	725	636	854
4' 0"	155	171	260	287	331	426	402	543	474	640
4' 6"	116	128	197	219	253	328	307	419	362	494
5' 0"	88	98	152	170	196	257	239	330	283	390
5' 6"	67	76	119	134	154	205	189	263	224	312
6' 0"	52	58	94	106	123	165	151	213	179	253
6' 6"	39	45	75	85	98	134	121	175	144	208
7' 0"		35	59	68	78	110	97	144	117	171
7' 6"			46	54	63	90	78	119	95	142
8' 0"			36	43	50	73	63	98	76	118
8' 6"					39	60	50	81	61	98
9' 0"					30	49	39	67	49	81
9' 6"						39	30	55	38	67
10' 0"								45	29	55

Live loads in this table are based on the formula

$$M=\frac{W\ 1}{8}$$

for simple spans, with "M" being the lesser of Mc or Ms for that depth. The wt. of the slab only has been deducted from the total allowable load.

TABLE IV. ALLOWABLE LIVE LOADS FOR HOLORIB CONCRETE SLAB FORMS *WITH ADDITIONAL REINFORCING*

Total Slab Thickness		3½"	4"	4½"	5"	5½"	6"	6½"	7"
Effective Slab Thickness		2.5"	3.0"	3.5"	4.0"	4.5"	5.0"	5.5"	6.0"
Weight of Slab per Square Foot		43.75#	50.00#	56.25#	62.50#	68.75#	75.00#	81.25#	87.50#
Area of Additional Reinforcing	20-Ga.	.0608	.1304	.2000	.2696	.3392	.4088	.4784	.5480
Required per Transverse Foot of Slab	18-Ga.	See Table III	.0352	.1048	.1744	.2440	.3136	.3832	.4528
M—Resisting Moment		10545"#	15185"#	20668"#	26995"#	34166"#	42180"#	51038"#	60739"#
SPAN		LIVE LOADS (Pounds per Square Foot)							
3' 0"		737	1075	1475	1937	2462	3049	3699	4411
3' 6"		530	776	1069	1406	1790	2220	2696	3217
4' 0"		395	583	805	1062	1354	1682	2045	2443
4' 6"		303	450	624	826	1056	1314	1599	1912
5' 0"		237	355	495	657	842	1050	1280	1532
5' 6"		188	285	399	532	684	855	1044	1250
6' 0"		151	231	327	437	564	706	864	1037
6' 6"		122	190	270	363	470	591	724	870
7' 0"		99	156	225	304	396	499	613	738
7' 6"		81	130	189	257	336	425	524	632
8' 0"		66	108	159	218	287	364	451	545
8' 6"		53	90	135	186	246	314	390	472
9' 0"		43	75	114	159	212	272	339	412
9' 6"		34	62	97	136	183	237	296	361
10' 0"			51	82	117	159	206	259	317
10' 6"			42	69	100	138	180	228	279
11' 0"			33	58	86	119	157	200	247
11' 6"				48	73	103	138	176	218
12' 0"				40	62	89	120	155	193
12' 6"				32	52	77	105	137	171

Live loads in this table are based on the formula

$$M=\frac{W\ 1}{8}$$

for simple spans. The wt. of the slab only has been deducted from the total allowable load.

For spans greater than those shown in table, see nearest Fenestra representative.

NOTE

Calculations for all four tables are based upon the use of Holorib Concrete Forms and, consequently, we cannot be responsible for their use with any other construction.

HOLORIB SPECIFICATIONS

HOLORIB STEEL DECK

1. GENERAL—All roof areas noted on the plans shall be covered with Holorib Steel Deck, manufactured by Detroit Steel Products Company.

2. MATERIAL—Deck shall be formed from steel sheets (*or,* from copper-bearing steel sheets containing from .20% to .25% copper), of not less than ...... gage, using not less than ...... pounds of steel per square of finished roof area, not including weight of paint, accessories or that part of deck furnished to form end-laps. (*Select gage from loading tables on page 20. Specify weight of net square of finished roof area as follows: 320 lbs. for 18 gage; 240 lbs. for 20 gage.*)

3. CONSTRUCTION—The deck shall have integral pyramidal-shaped ribs, all continuous and complete in cross section, spaced not more than 6″ on center. Ribs shall be formed to a depth of not less than 1½″, with an opening of not more than ⅜″ at the apex and a width of not less than 1″ at the base.

Sheets shall be so fabricated as to permit telescoping end-laps not less than 2½″ long, always made over structural supports. Side-laps shall be of the interlocking type made by inserting the flanged (barge) side of the sheet in the complete outside rib of the adjoining sheet.

The top of the deck shall form a virtually flat and continuous surface for the complete support of insulating material. The finished deck shall have sufficient strength to carry all normal roof loads over recommended purlin spacings without excessive or permanent deflection.

The finished deck shall be so constructed as to prevent the flow of asphalt through it.

4. SHOP FINISH—After fabrication and before shipment the deck shall receive a sprayed-on, oven-baked coat of priming paint to act as protection to the deck while in transit and to serve as a base for field painting. (*The ceiling side of the deck should receive a field coat of paint after erection under the General Painting Specifications.*)

5. ERECTION—The deck shall be fastened to the structural steel by means of electric arc welding. Welds shall be sound and spaced on an average of 9″ on centers at end laps and not more than 18″ on centers on all intermediate purlins. All welds shall be touched up with paint before succeeding sheets are laid.

6. COLLATERAL MATERIAL—Where closures must be attached direct to the deck in order to provide a finished base for application of insulation, necessary sheet metal shall be provided by steel deck manufacturer. (*Closures, flashing and edging, which should be applied after insulation is placed, shall be supplied and placed by sheet metal contractor and included in the General Sheet Metal Specifications.*)

HOLORIB ACOUSTIC ROOF UNITS

1. GENERAL—All roof areas noted on the plans shall be covered with Holorib Acoustic Roof Units, designed by Detroit Steel Products Company. These Roof Units shall have a sound reduction coefficient of not less than 75%.

2. MATERIAL

a. Steel Deck—Deck shall be formed from steel sheets (*or,* from copper-bearing steel sheets containing from .20% to .25% copper), of not less than 18-gage, using not less than 320 pounds of steel per square of finished roof area, not including weight of paint, accessories or that part of deck furnished to form end-laps.

b. Barge Clips—Barge clips shall be furnished by Detroit Steel Products Company. Two barge clips shall be used per sheet on spans over 4′ and one clip per sheet on spans of 4′ or under.

c. Sound Absorbing Element—Sound absorbing elements shall be 1¼″ thick, 2½ lb. density Fiberglas, coated one side, furnished by Detroit Steel Products Company.

d. Insulation—Insulation shall consist of not less than 1″ of rigid roof insulation (to be provided under Built-up Roofing Specification).

e. Insulation Clips—Insulation clips shall be a steel piercing type furnished by Detroit Steel Products Company. Clips shall be placed 50 per square, or 4 per standard 2′ x 4′ sheet.

f. Waterproofing—Waterproofing shall be 20 year bonded built-up roofing (to be provided under Built-up Roofing Specification).

3. CONSTRUCTON (Steel Deck)—The deck shall have integral pyramidal-shaped ribs, all continuous and complete in cross section, spaced not more than 6″ on center. Ribs shall be formed to a depth of not less than 1½″, with an opening of not more than ⅜″ at the apex and a width of not less than 1″ at the base.

Sheets shall be so fabricated as to permit telescoping end-laps not less than 2½″ long, always made over structural supports. Side-laps shall be of the interlocking type made by inserting the flanged (barge) side of the sheet in the complete outside rib of the adjoining sheet.

The bottom of the deck shall be perforated with ⅛″ diameter holes, spaced 25/64″ on center (about 946 to the square foot). Owing to the nature of this construction, the deck should be limited to 6′-8″ maximum spans.

4. SHOP FINISH—Same as Holorib Steel Deck.

5. ERECTION

a. Steel Deck—Sheets shall be laid in strict accordance with manufacturer's instructions, ribs upward, flat surface down. At the end-laps of the deck, weld not less than two ribs of each sheet to purlins, and at intermediate supports, the center rib shall be welded. All welds shall be touched up with paint before succeeding sheets are laid.

b. Sound Absorbing Element—(To be furnished by Detroit Steel Products Company and installed by Built-up Roofing Contractor.) The sound absorbing element shall be cut to width for insertion in the space between ribs and shall be laid on special wire supports furnished by the steel deck manufacturer and so placed as to have the coated side down.

c. Insulation—Before insulation is laid, a layer of 30 lb. roofing felt shall be applied dry over steel deck ribs and sound absorbing element to act as a vapor seal and asphalt barrier. Insulation shall be laid in a mopping of hot asphalt and shall be attached by nailing directly into the steel deck ribs with insulation clips.

d. Waterproofing—Built-up roofing shall be mopped to insulation in accordance with manufacturer's instructions.

6. COLLATERAL MATERIAL—Same as Holorib Steel Deck.

HOLORIB REINFORCING FORMS

1. GENERAL—All concrete slabs noted on the plans shall be poured on permanent Holorib Reinforcing Forms, manufactured by Detroit Steel Products Company.

2. MATERIAL—Same as Holorib Steel Deck. (*Select gage of Holorib from tables on page 23.*)

3. CONSTRUCTION—The deck shall have integral pyramidal-shaped ribs, all continuous and complete in cross section, spaced not more than 6″ on center. Ribs shall be formed to a depth of not less than 1½″, with an opening of not more than ⅜″ at the apex and a width of not less than 1″ at the base.

Sheets shall be so fabricated as to permit telescoping end-laps not less than 2½″ long, always made over structural supports. Side-laps shall be of the interlocking type made by inserting the flanged (barge) side of the sheet in the complete outside rib of the adjoining sheet.

The ribs shall be so designed that when laid with the flat side of the deck down, the pyramidal ribs shall extend upward to key into and reinforce the poured concrete slab.

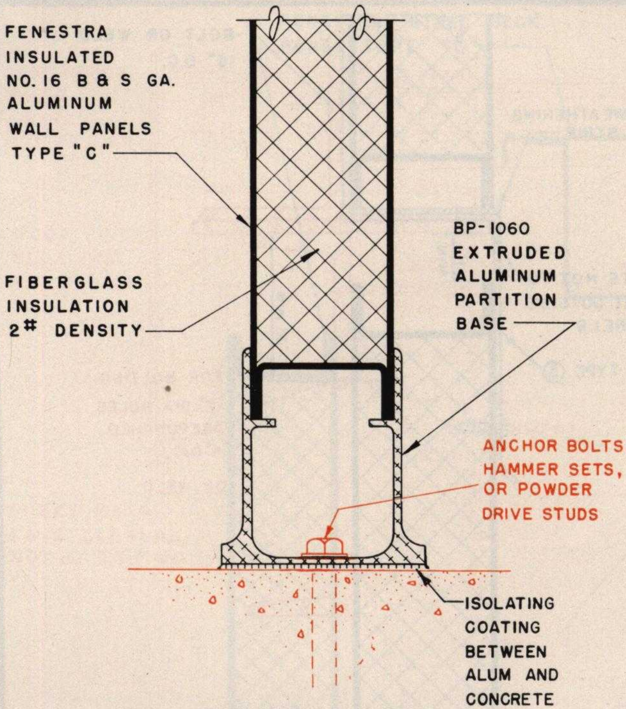
4. SHOP FINISH—Same as Holorib Steel Deck.

5. ERECTION—Forms shall be laid over structural supports with ribs turned upward. They shall be fastened to support by electric welds spaced an average of not more than 9″ on centers.

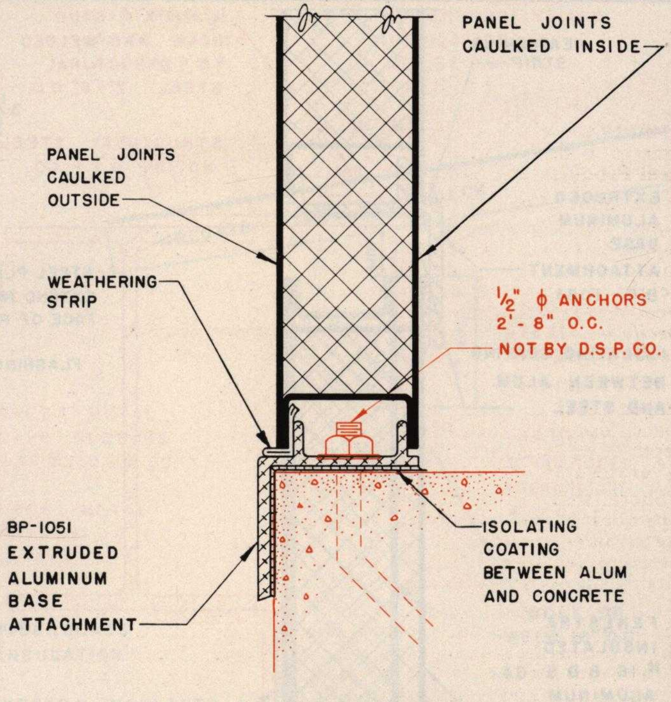
6. COLLATERAL MATERIAL—(*To be supplied and placed by General Contractor*)

a. Temporary Shoring—If supporting beam spacing exceeds recommended maximum spans for Holorib Reinforcing Forms (*page* 23), temporary shoring shall be installed as detailed in the plans.

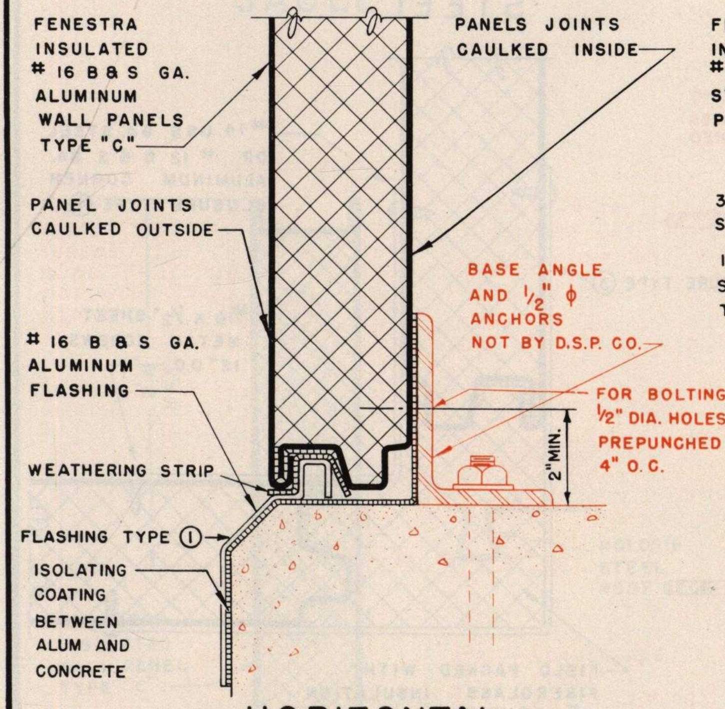
b. Additional Reinforcing—If additional reinforcing is required, its form and size should be clearly specified. If welded wire fabric is used, it shall be laid with longitudinal wires, running between ribs of Holorib form and supported by transverse wires resting on top of the ribs. If rods or bars are specified, they shall be placed between the ribs, and supported on transverse wires or light rods resting on top of the ribs.



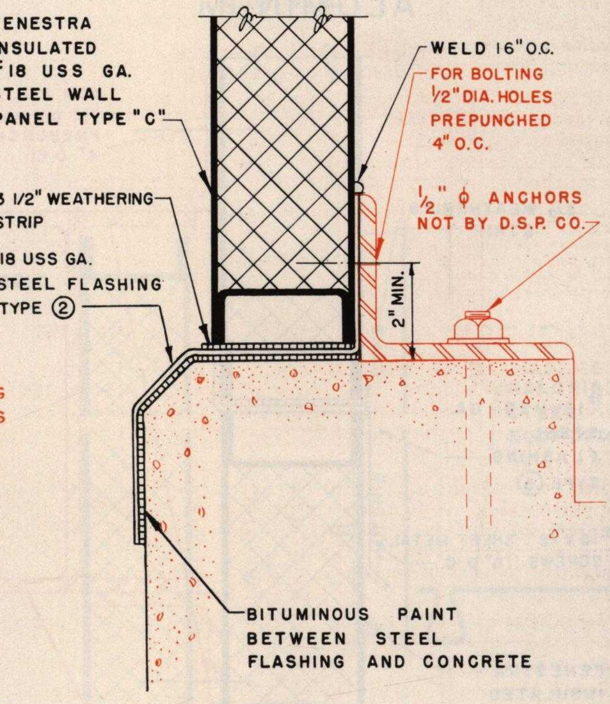
PARTITION



ALUMINUM



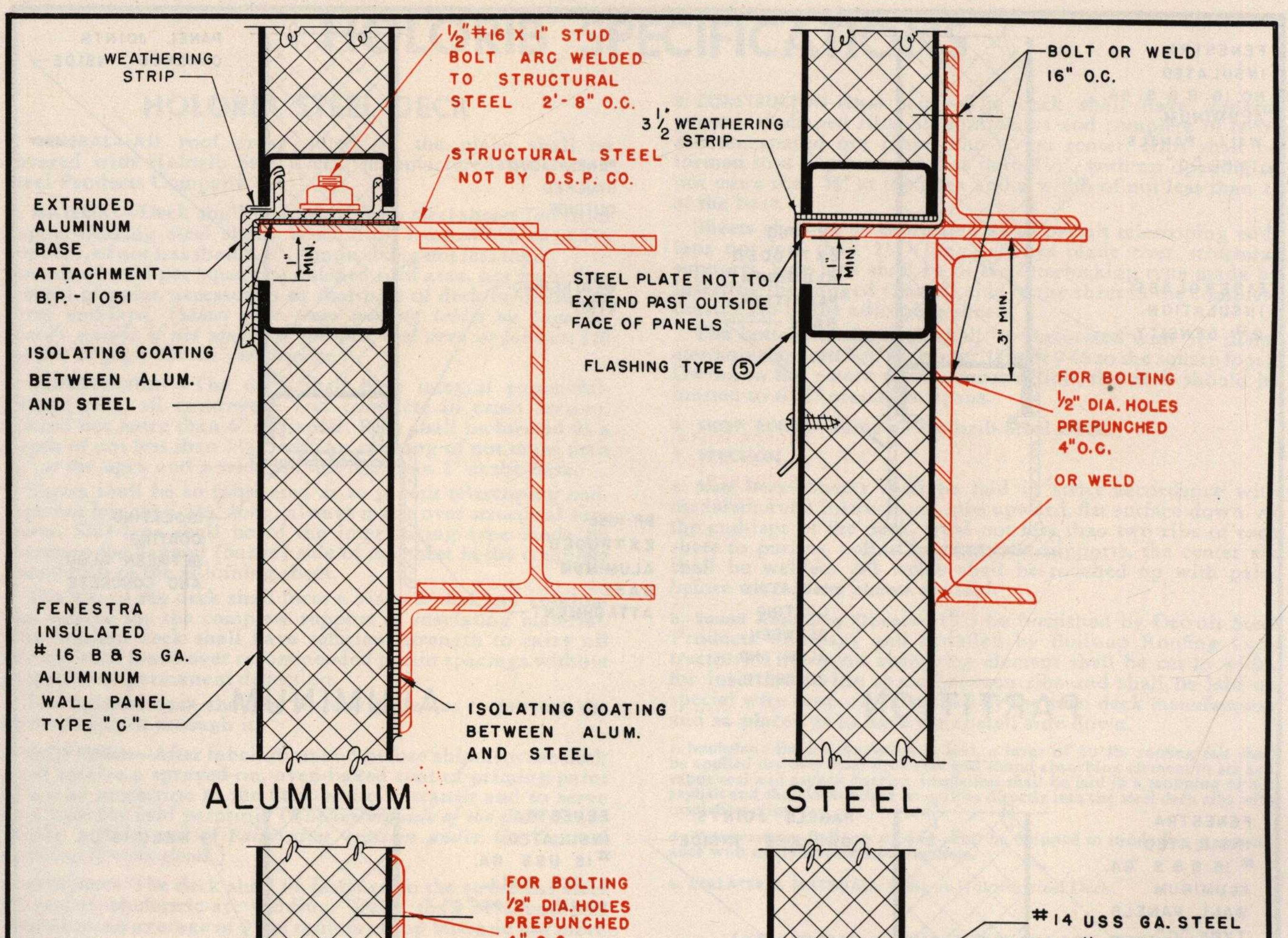
HORIZONTAL



STEEL

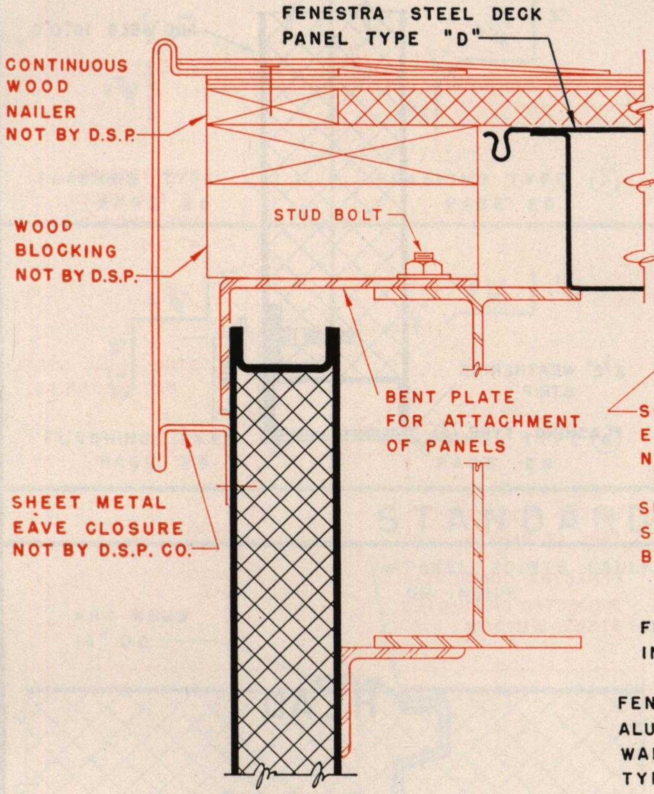
C PANEL BASE DETAILS

PA-710

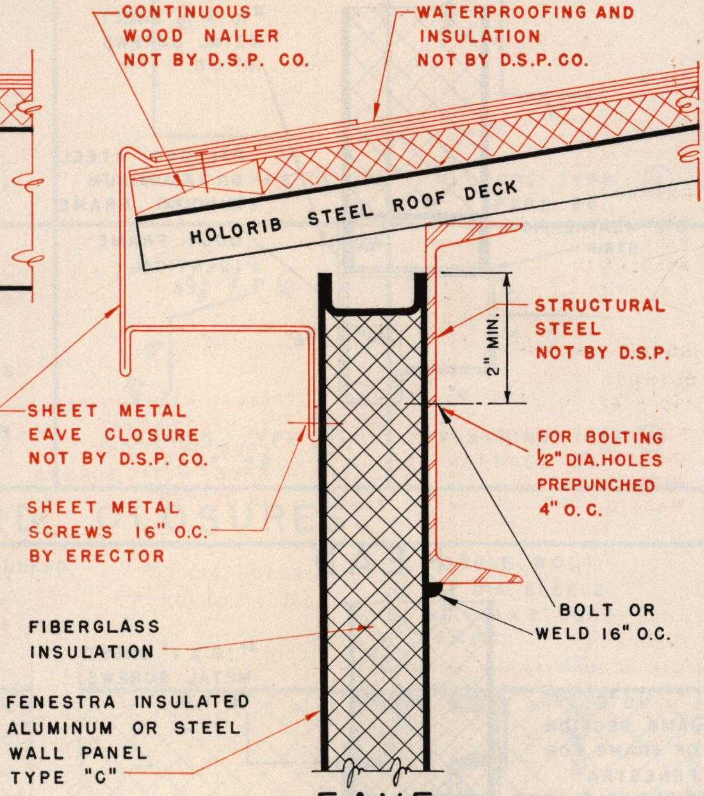

WEATHERING STRIP
1/2" #16 X 1" STUD BOLT ARC WELDED TO STRUCTURAL STEEL 2'-8" O.C.
STRUCTURAL STEEL NOT BY D.S.P. CO.
EXTRUDED ALUMINUM BASE ATTACHMENT B.P. - 1051
1" MIN.
STEEL PLATE NOT TO EXTEND PAST OUTSIDE FACE OF PANELS
ISOLATING COATING BETWEEN ALUM. AND STEEL
FENESTRA INSULATED # 16 B&S GA. ALUMINUM WALL PANEL TYPE "C"
ISOLATING COATING BETWEEN ALUM. AND STEEL
ALUMINUM
BOLT OR WELD 16" O.C.
3 1/2" WEATHERING STRIP
1" MIN.
3" MIN.
FLASHING TYPE ⑤
FOR BOLTING 1/2" DIA. HOLES PREPUNCHED 4" O.C.
OR WELD
STEEL
FOR BOLTING 1/2" DIA. HOLES PREPUNCHED 4" O.C.
3 1/2" WEATHERING STRIP
#18 USS GA. STEEL FLASHING TYPE ⑤
#10 X 1/2" SHEET METAL SCREWS 16" O.C.
FENESTRA INSULATED #18 USS GA. STEEL WALL PANEL TYPE "C"
STRUCTURAL STEEL NOT BY D.S.P. CO.
#14 USS GA. STEEL OR # 12 B&S GA. ALUMINUM CORNER CLOSURE TYPE ④
CLOSURE TYPE ③
#10 X 1/2" SHEET METAL SCREWS 12" O.C.
FIELD PACKED WITH FIBERGLASS INSULATION 2# DENSITY
TYPICAL CORNER

C PANEL INTERMEDIATE SUPPORT

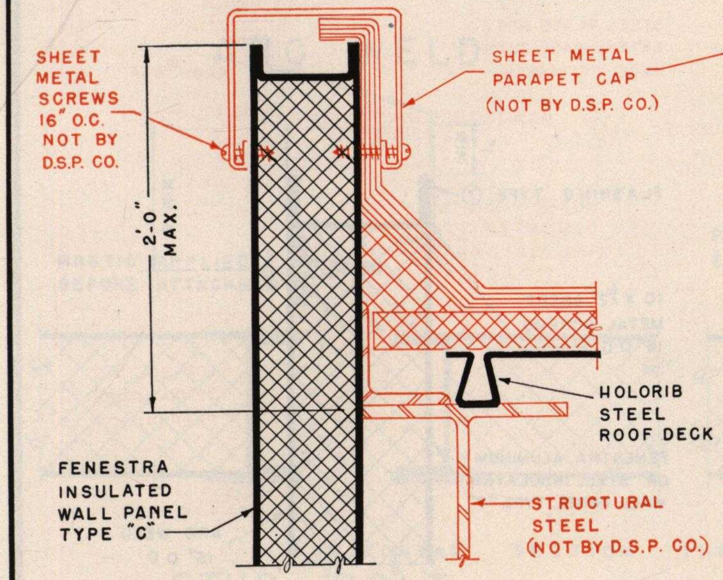
PA-712



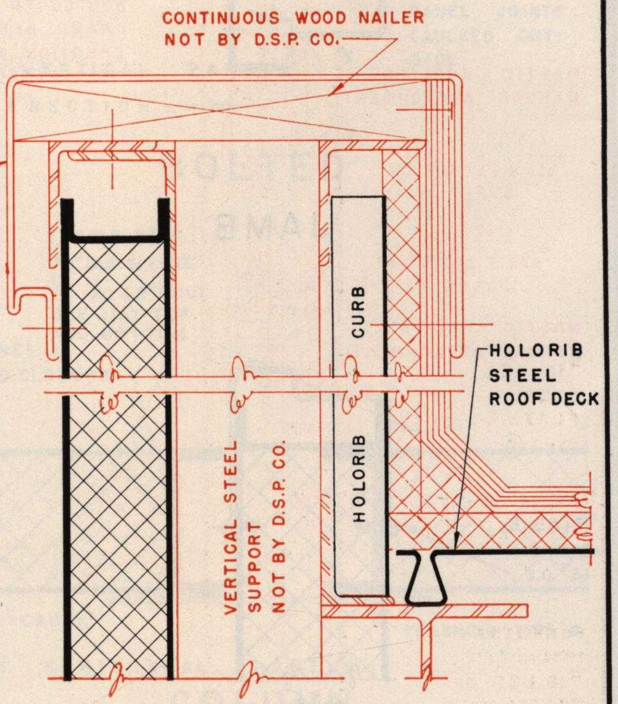
GABLE



EAVE

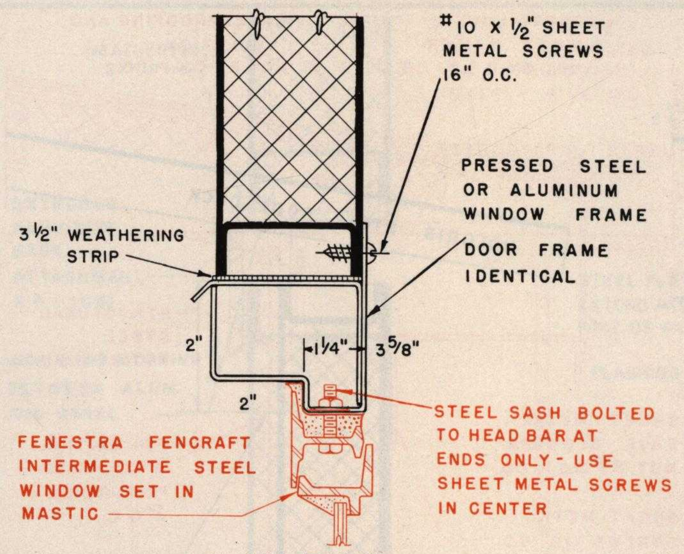


LOW PARAPET

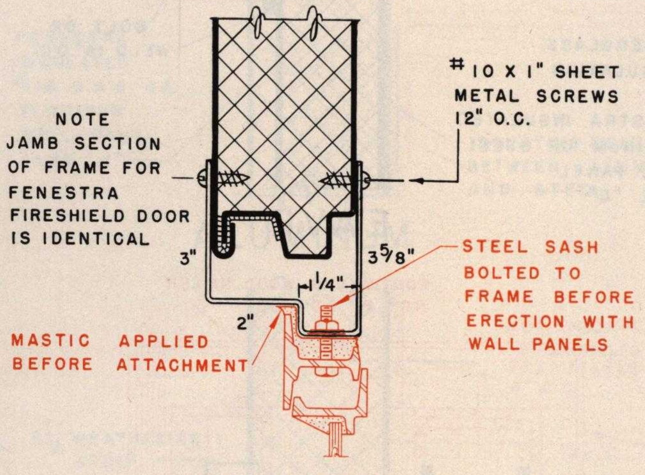


HIGH PARAPET

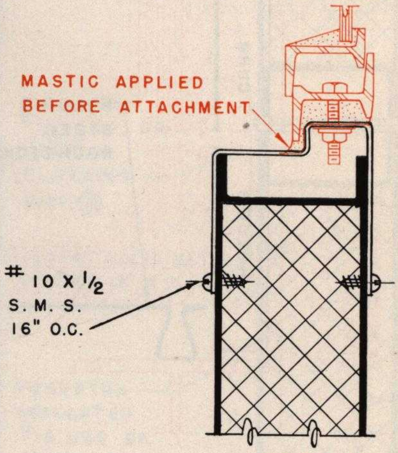
EAVE, GABLE AND PARAPET DETAILS PA-709


#10 X 1/2" SHEET METAL SCREWS 16" O.C.
PRESSED STEEL OR ALUMINUM WINDOW FRAME
DOOR FRAME IDENTICAL
3 1/2" WEATHERING STRIP
2"
1 1/4"
3 5/8"
2"
FENESTRA FENCRAFT INTERMEDIATE STEEL WINDOW SET IN MASTIC
STEEL SASH BOLTED TO HEAD BAR AT ENDS ONLY - USE SHEET METAL SCREWS IN CENTER

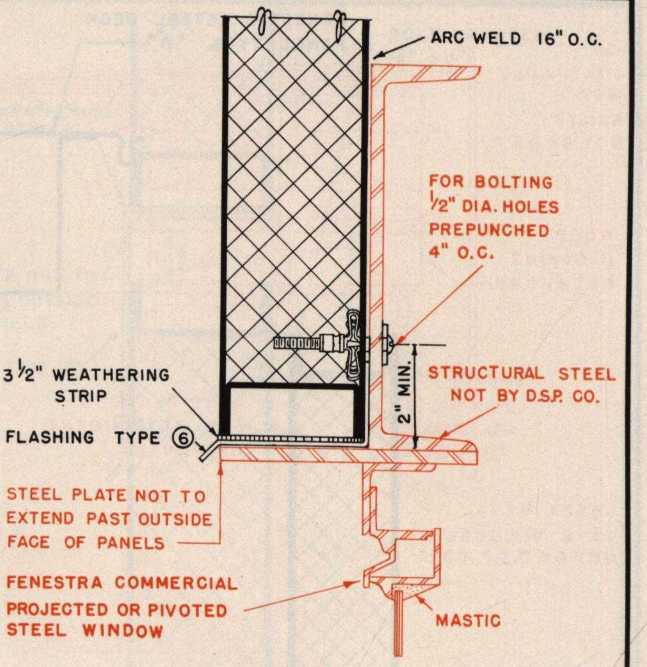
HEAD


#10 X 1" SHEET METAL SCREWS 12" O.C.
NOTE JAMB SECTION OF FRAME FOR FENESTRA FIRESHIELD DOOR IS IDENTICAL
3"
3 5/8"
1 1/4"
2"
STEEL SASH BOLTED TO FRAME BEFORE ERECTION WITH WALL PANELS
MASTIC APPLIED BEFORE ATTACHMENT

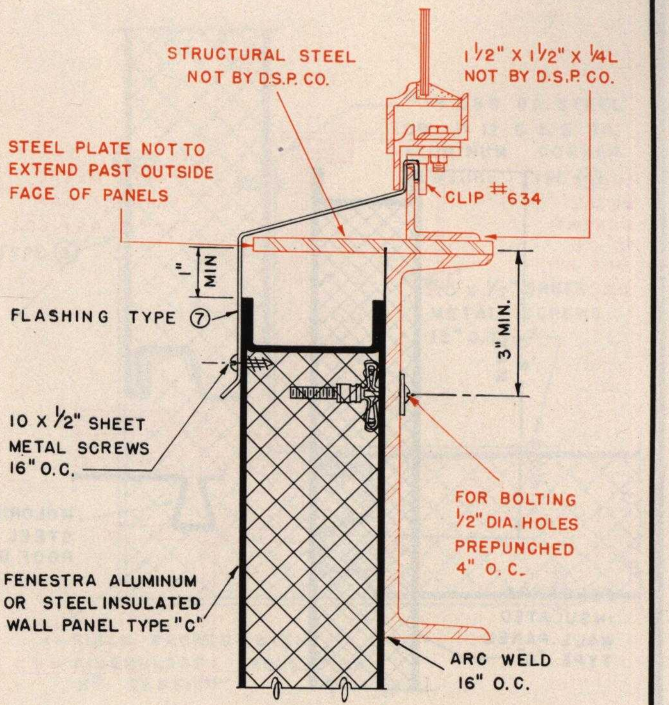
JAMB



SILL


ARC WELD 16" O.C.
FOR BOLTING 1/2" DIA. HOLES PREPUNCHED 4" O.C.
2" MIN.
STRUCTURAL STEEL NOT BY D.S.P. CO.
3 1/2" WEATHERING STRIP
FLASHING TYPE ⑥
STEEL PLATE NOT TO EXTEND PAST OUTSIDE FACE OF PANELS
FENESTRA COMMERCIAL PROJECTED OR PIVOTED STEEL WINDOW
MASTIC

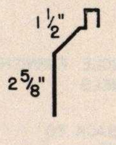
HEAD


STRUCTURAL STEEL NOT BY D.S.P. CO.
1 1/2" X 1 1/2" X 1/4L NOT BY D.S.P. CO.
STEEL PLATE NOT TO EXTEND PAST OUTSIDE FACE OF PANELS
CLIP #634
1" MIN
FLASHING TYPE ⑦
3" MIN.
10 X 1/2" SHEET METAL SCREWS 16" O.C.
FOR BOLTING 1/2" DIA. HOLES PREPUNCHED 4" O.C.
FENESTRA ALUMINUM OR STEEL INSULATED WALL PANEL TYPE "C"
ARC WELD 16" O.C.

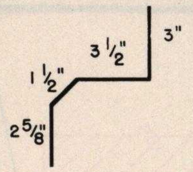
SILL

C PANEL FENESTRATION DETAILS

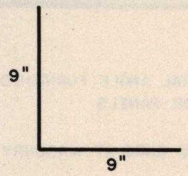
PA-713



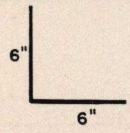
FLASHING TYPE ①
PAGE 25



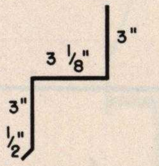
FLASHING TYPE ②
PAGE 25



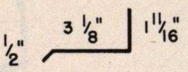
CLOSURE TYPE ③
PAGE 26



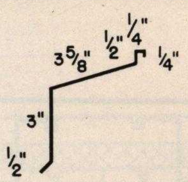
CLOSURE TYPE ④
PAGE 26



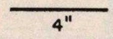
FLASHING TYPE ⑤
PAGE 26



FLASHING TYPE ⑥
PAGE 28

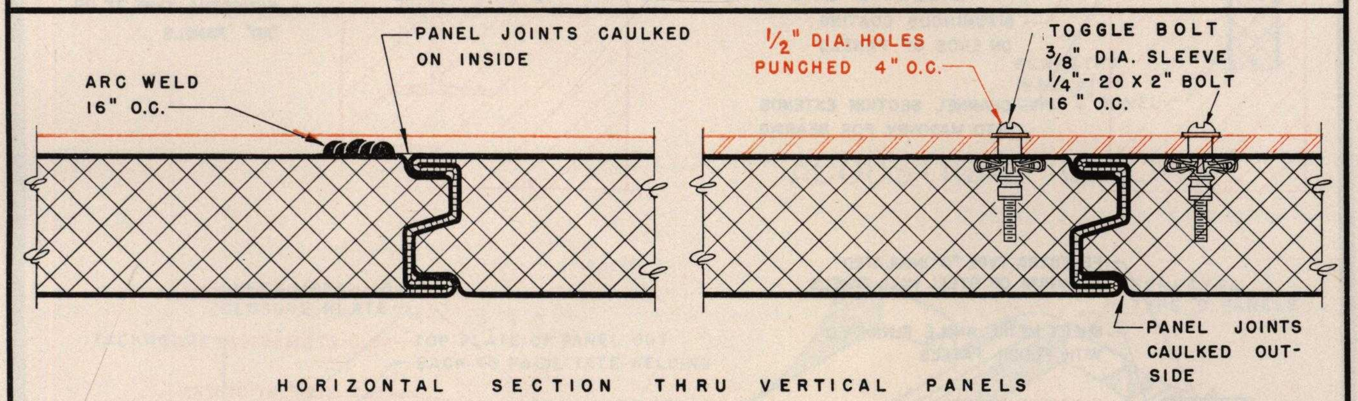


FLASHING TYPE ⑦
PAGE 28



FLASHING TYPE ⑧
PAGE 29

STANDARD CLOSURES

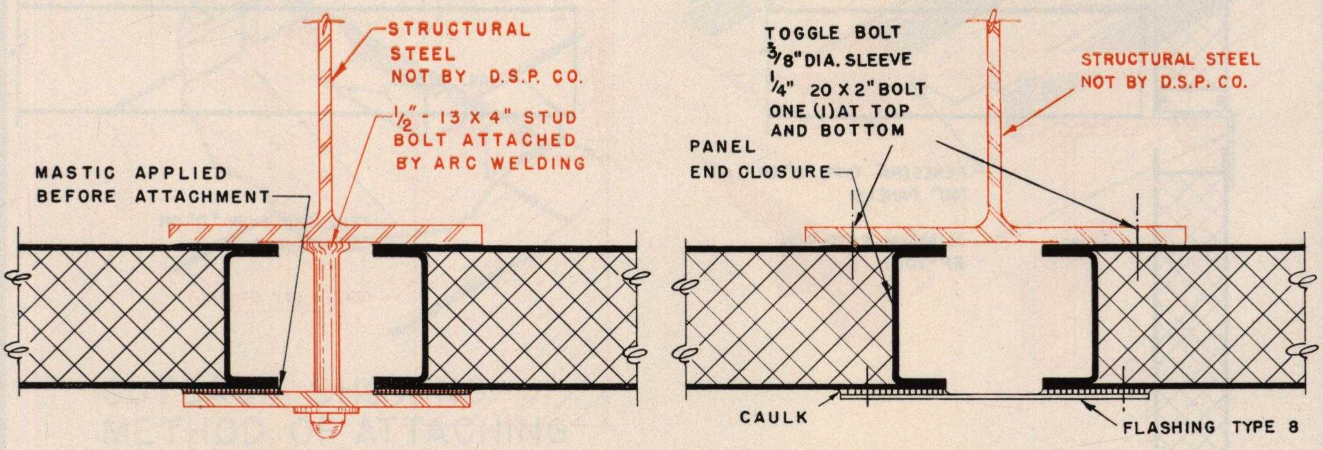

PANEL JOINTS CAULKED ON INSIDE
ARC WELD 16" O.C.
1/2" DIA. HOLES PUNCHED 4" O.C.
TOGGLE BOLT 3/8" DIA. SLEEVE 1/4" - 20 X 2" BOLT 16" O.C.
PANEL JOINTS CAULKED OUTSIDE

HORIZONTAL SECTION THRU VERTICAL PANELS

—DIRECTION OF ERECTION →

ARC WELD

BOLTED


STRUCTURAL STEEL NOT BY D.S.P. CO.
1/2" - 13 X 4" STUD BOLT ATTACHED BY ARC WELDING
MASTIC APPLIED BEFORE ATTACHMENT
TOGGLE BOLT 3/8" DIA. SLEEVE 1/4" 20 X 2" BOLT ONE (I) AT TOP AND BOTTOM
PANEL END CLOSURE
STRUCTURAL STEEL NOT BY D.S.P. CO.
CAULK
FLASHING TYPE 8

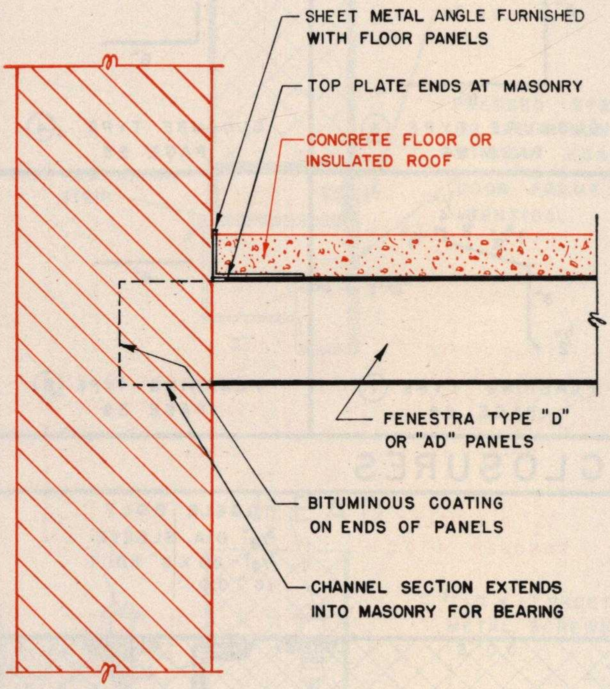
HORIZONTAL SECTION THRU HORIZONTAL PANELS

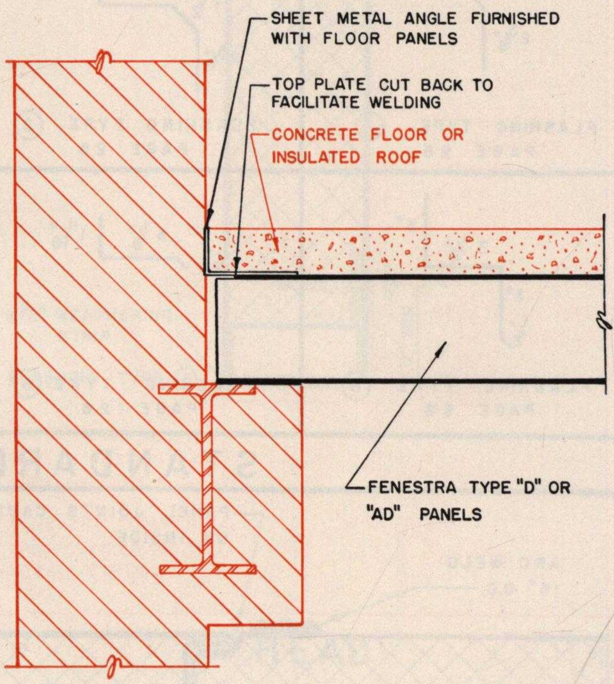
STUD BOLT

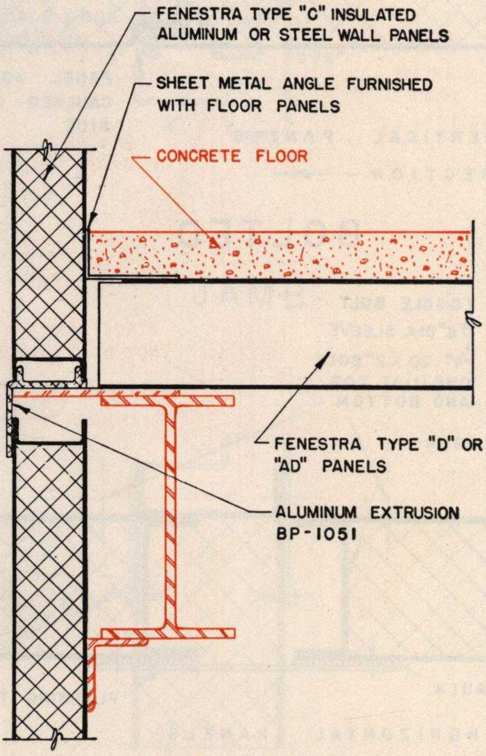
COLUMN

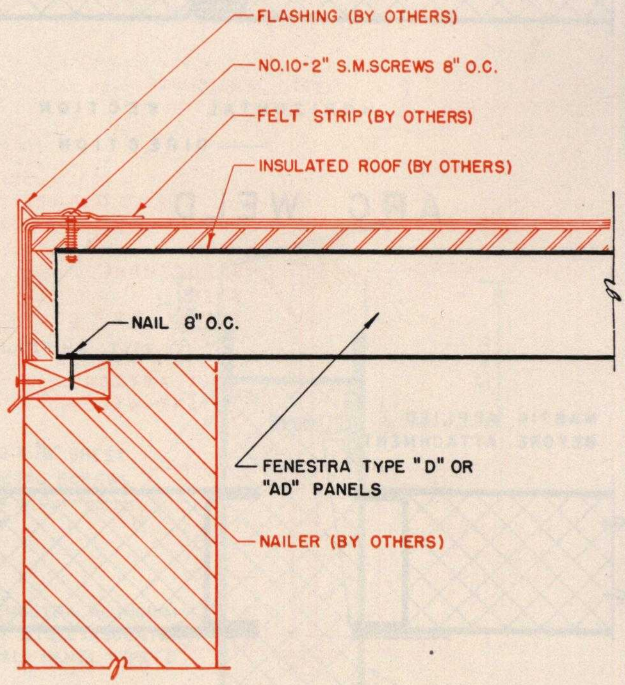
C PANEL ATTACHMENT DETAILS

PA-711


SHEET METAL ANGLE FURNISHED WITH FLOOR PANELS
TOP PLATE ENDS AT MASONRY
CONCRETE FLOOR OR INSULATED ROOF
FENESTRA TYPE "D" OR "AD" PANELS
BITUMINOUS COATING ON ENDS OF PANELS
CHANNEL SECTION EXTENDS INTO MASONRY FOR BEARING

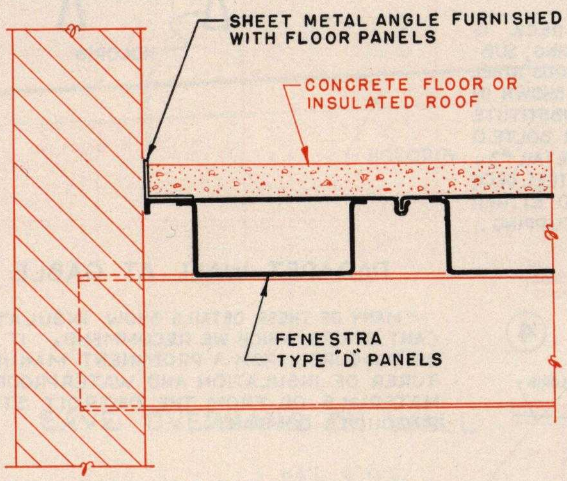

SHEET METAL ANGLE FURNISHED WITH FLOOR PANELS
TOP PLATE CUT BACK TO FACILITATE WELDING
CONCRETE FLOOR OR INSULATED ROOF
FENESTRA TYPE "D" OR "AD" PANELS

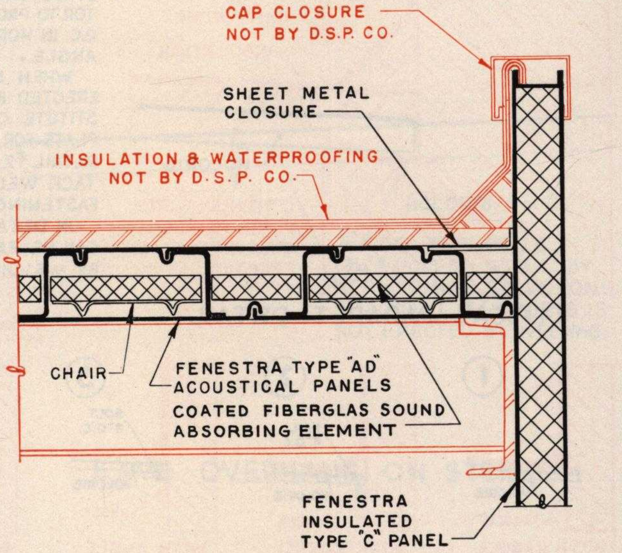

FENESTRA TYPE "C" INSULATED ALUMINUM OR STEEL WALL PANELS
SHEET METAL ANGLE FURNISHED WITH FLOOR PANELS
CONCRETE FLOOR
FENESTRA TYPE "D" OR "AD" PANELS
ALUMINUM EXTRUSION BP-1051


FLASHING (BY OTHERS)
NO.10-2" S.M.SCREWS 8" O.C.
FELT STRIP (BY OTHERS)
INSULATED ROOF (BY OTHERS)
NAIL 8" O.C.
FENESTRA TYPE "D" OR "AD" PANELS
NAILER (BY OTHERS)

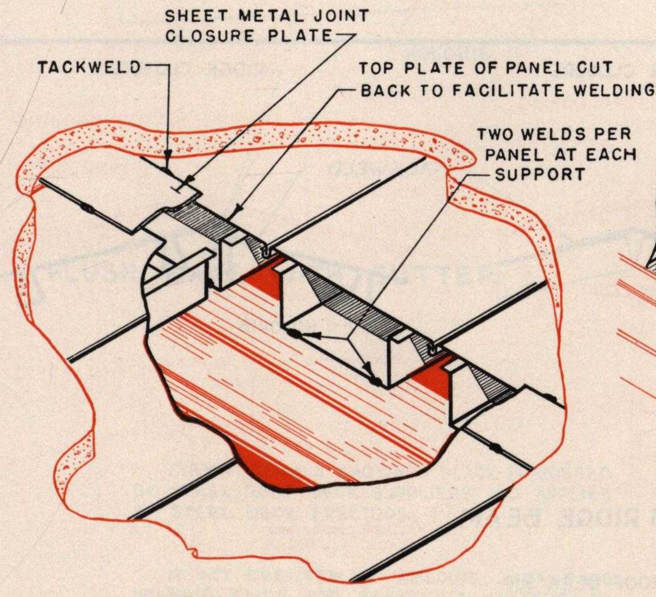
D PANEL DETAILS

PA-717

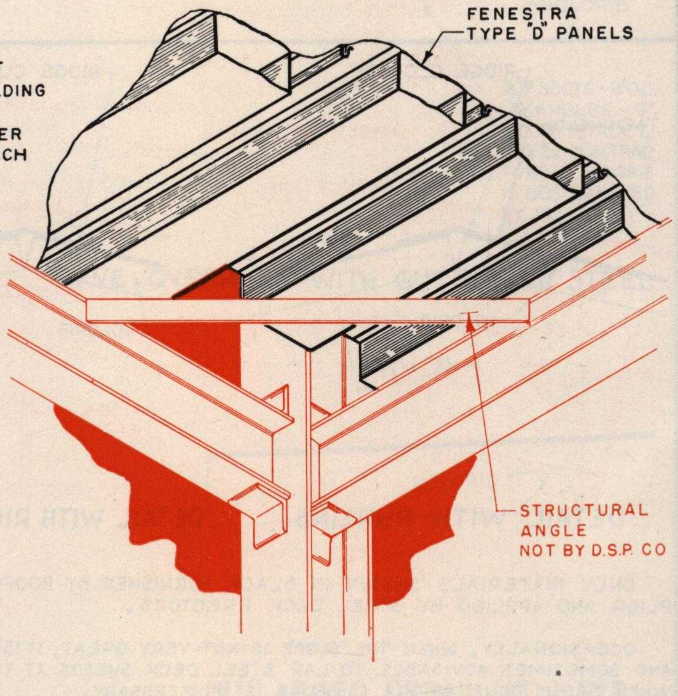

SHEET METAL ANGLE FURNISHED WITH FLOOR PANELS
CONCRETE FLOOR OR INSULATED ROOF
FENESTRA TYPE "D" PANELS


CAP CLOSURE NOT BY D.S.P. CO.
SHEET METAL CLOSURE
INSULATION & WATERPROOFING NOT BY D.S.P. CO.
CHAIR
FENESTRA TYPE "AD" ACOUSTICAL PANELS
COATED FIBERGLAS SOUND ABSORBING ELEMENT
FENESTRA INSULATED TYPE "C" PANEL

ACOUSTICAL CEILING

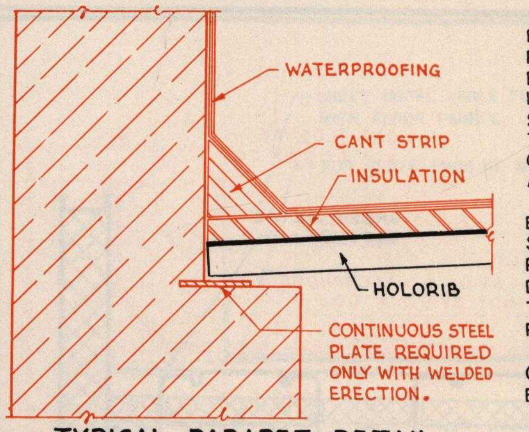

SHEET METAL JOINT CLOSURE PLATE
TACKWELD
TOP PLATE OF PANEL CUT BACK TO FACILITATE WELDING
TWO WELDS PER PANEL AT EACH SUPPORT

CUTBACK SHOWING METHOD OF ATTACHING FLOOR PANELS



DETAIL AT DUCT OPENINGS

FLOOR PANEL DETAILS **PA-718**

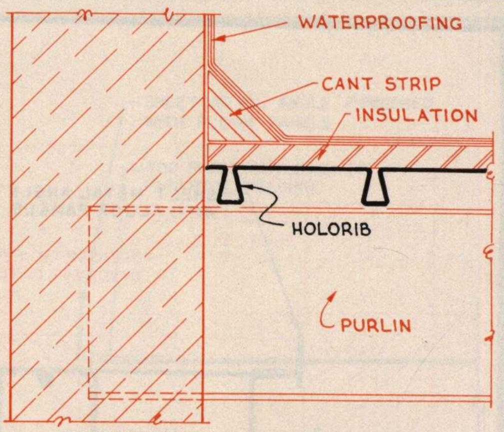


TYPICAL PARAPET DETAIL

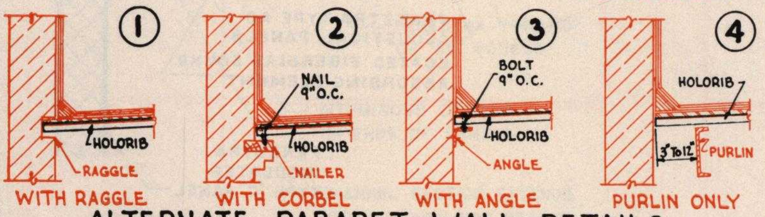
WHEN STEEL DECK IS ERECTED BY CLIPPING, CONTINUOUS STEEL PLATE IN DETAIL AT LEFT SHOULD BE REPLACED BY NAILER SHOWN IN DETAIL #2. IN DETAIL #3, STRUCTURAL STEEL CONTRACTOR TO PROVIDE 7/16" ϕ HOLES - 9" O.C. IN HORIZONTAL LEG OF ANGLE.

WHEN STEEL DECK IS ERECTED BY WELDING, SUBSTITUTE CONTINUOUS STEEL PLATE FOR NAILER SHOWN IN DETAIL #2 AND SUBSTITUTE TACK WELDS FOR BOLTED FASTENINGS IN DETAIL #3.

IN DETAIL #4 STEEL DECK CAN BE FASTENED EITHER BY WELDING OR CLIPPING.



PARAPET WALL AT GABLE



WITH RAGGLE
WITH CORBEL
WITH ANGLE
PURLIN ONLY

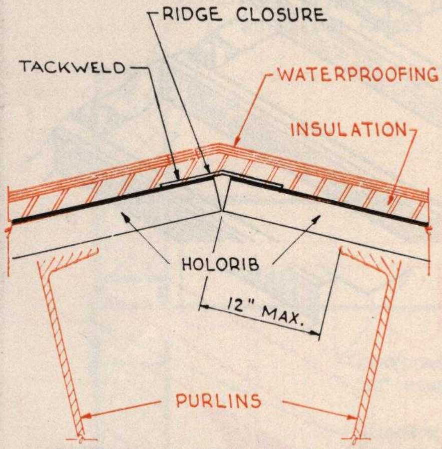
ALTERNATE PARAPET WALL DETAILS

MANY OF THESE DETAILS SHOW INSULATION CANT STRIPS WHICH WE RECOMMEND. IT CAN BE PROCURED FROM A PROMINENT MANUFACTURER OF INSULATION AND WATERPROOFING MATERIALS OR FROM THE DETROIT STEEL PRODUCTS COMPANY.

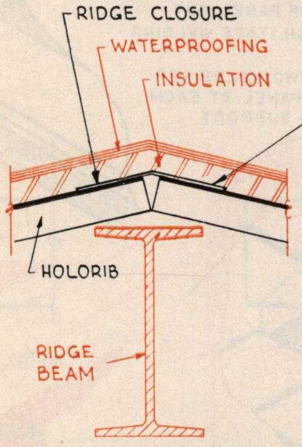
ONLY MATERIALS SHOWN IN BLACK FURNISHED BY STEEL ROOF DECK SUPPLIER AND APPLIED BY STEEL DECK ERECTORS.

PARAPET WALL DETAILS

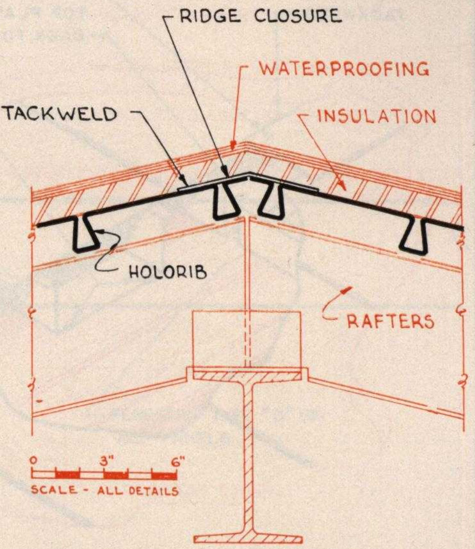
H-101



DETAIL WITH PURLINS



DETAIL WITH RIDGE BEAM



DETAIL WITH RAFTERS
(HOLORIB RIBS PARALLEL WITH RIDGE)

ONLY MATERIALS SHOWN IN BLACK FURNISHED BY ROOF DECK SUPPLIER AND APPLIED BY STEEL DECK ERECTORS.

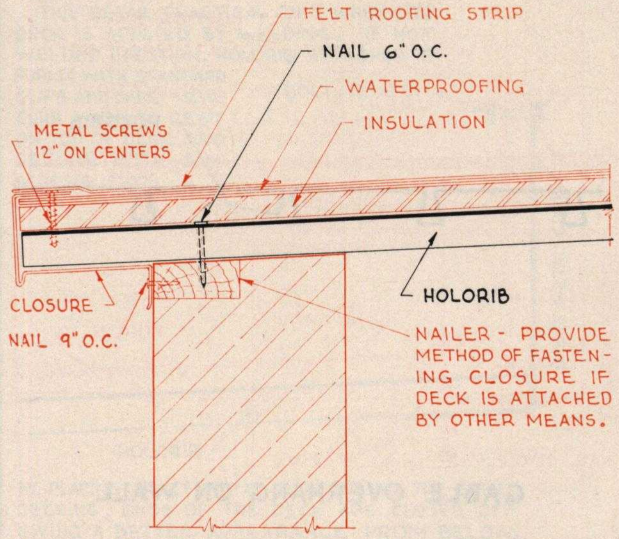
OCCASIONALLY, WHEN THE SLOPE IS NOT VERY GREAT, IT IS POSSIBLE AND SOMETIMES ADVISABLE TO LAP STEEL DECK SHEETS AT THE RIDGE. WHEN THIS IS DONE, RIDGE CLOSURE IS UNNECESSARY.

VALLEY DETAILS SIMILAR TO THOSE SHOWN FOR RIDGES.

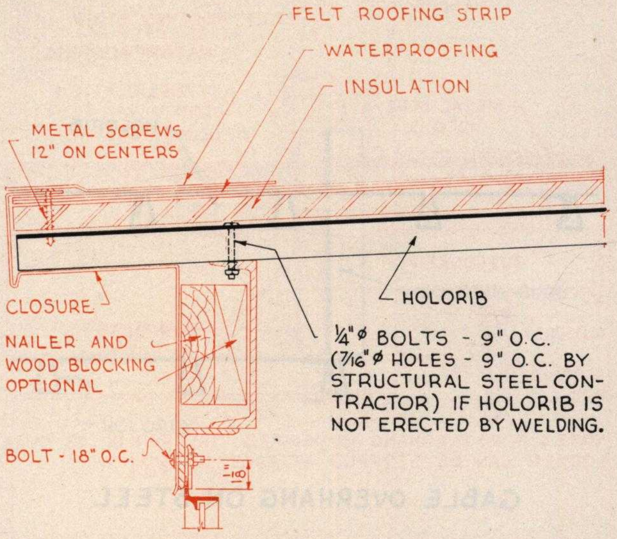
WHEN ROOF SLOPE IS SLIGHT, IT IS POSSIBLE TO CONTINUE THE DECK OVER THE PEAK AND ELIMINATE THE NEED FOR RIDGE CLOSURE.

RIDGE DETAILS

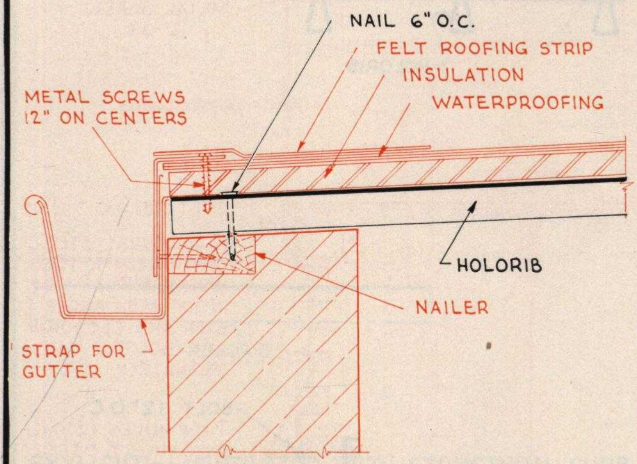
H-102


FELT ROOFING STRIP
NAIL 6" O.C.
WATERPROOFING
INSULATION
METAL SCREWS 12" ON CENTERS
HOLORIB
CLOSURE
NAIL 9" O.C.
NAILER - PROVIDE METHOD OF FASTENING CLOSURE IF DECK IS ATTACHED BY OTHER MEANS.

EAVE OVERHANG ON WALL

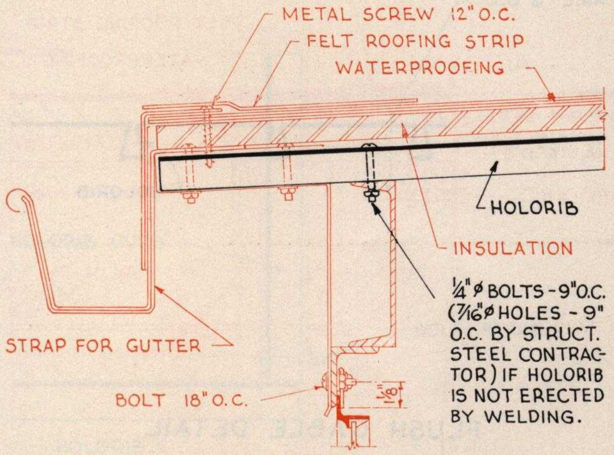

FELT ROOFING STRIP
WATERPROOFING
INSULATION
METAL SCREWS 12" ON CENTERS
HOLORIB
CLOSURE
NAILER AND WOOD BLOCKING OPTIONAL
1/4"⌀ BOLTS - 9" O.C. (7/16"⌀ HOLES - 9" O.C. BY STRUCTURAL STEEL CONTRACTOR) IF HOLORIB IS NOT ERECTED BY WELDING.
BOLT - 18" O.C.
18"

EAVE OVERHANG ON STEEL



FLUSH EAVE WITH GUTTER

0" 3" 6"
SCALE

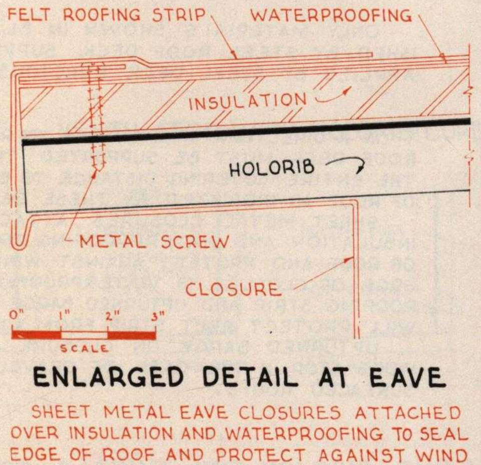

METAL SCREW 12" O.C.
FELT ROOFING STRIP
WATERPROOFING
HOLORIB
INSULATION
1/4"⌀ BOLTS - 9" O.C. (7/16"⌀ HOLES - 9" O.C. BY STRUCT. STEEL CONTRACTOR) IF HOLORIB IS NOT ERECTED BY WELDING.
STRAP FOR GUTTER
BOLT 18" O.C.
18"

EAVE OVERHANG WITH GUTTER ON STEEL

ONLY MATERIALS SHOWN IN BLACK FURNISHED BY STEEL ROOF DECK SUPPLIERS AND APPLIED BY STEEL DECK ERECTORS.

IF NOT ERECTED BY WELDING, STANDARD HOLORIB CLIPS FOR FASTENING HOLORIB TO EAVE STRUTS MAY BE USED IN LIEU OF BOLTS WHEN SLOPE OF ROOF DECK IS 1/2" IN 12" OR LESS.

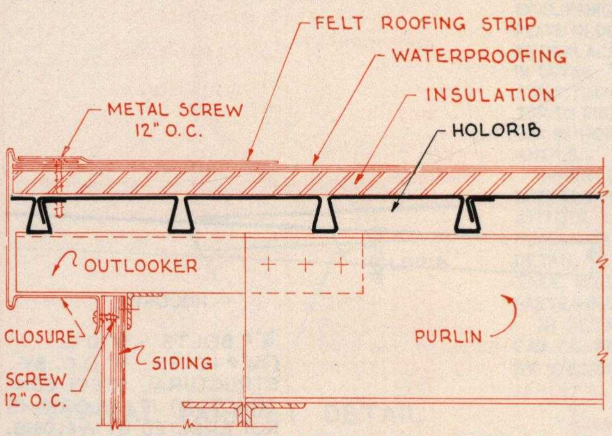
TOP SASH ANGLE SHOULD BE PUNCHED 9" O.C. BY STEEL CONTRACTOR. SASH AND CLOSURE ARE ALTERNATELY BOLTED 18" O.C.



ENLARGED DETAIL AT EAVE

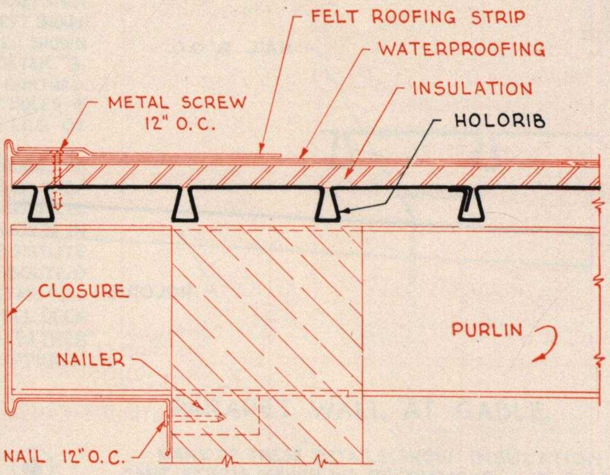
SHEET METAL EAVE CLOSURES ATTACHED OVER INSULATION AND WATERPROOFING TO SEAL EDGE OF ROOF AND PROTECT AGAINST WIND DAMAGE. FELT STRIP WATERPROOFS CLOSURE.

EAVE DETAILS **H-103**

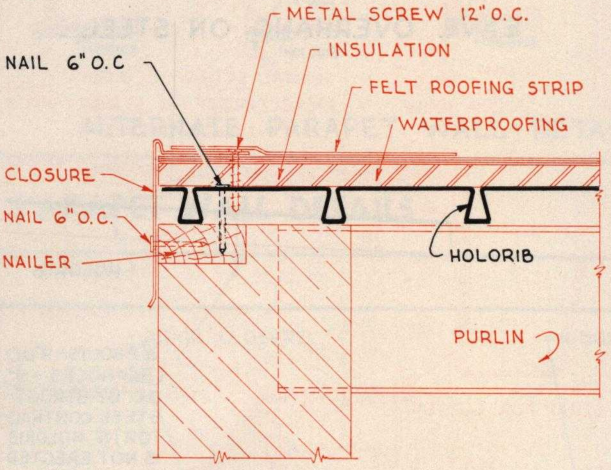


NOTE: IF NO OVERHANG IS DESIRED, THE PURLIN OR OUTLOOKER CAN BE STOPPED AT FACE OF SIDING.

GABLE OVERHANG ON STEEL



GABLE OVERHANG ON WALL



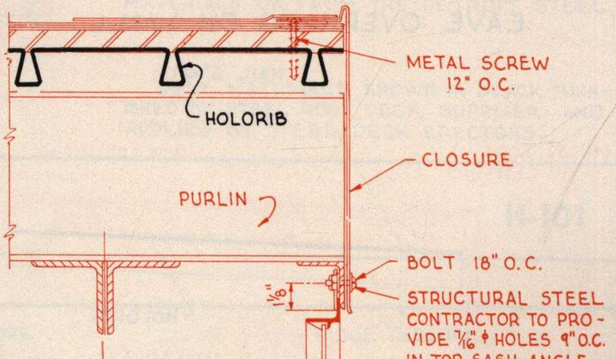
FLUSH GABLE DETAIL

ONLY MATERIALS SHOWN IN BLACK FURNISHED BY STEEL ROOF DECK SUPPLIER AND APPLIED BY STEEL DECK ERECTORS.

IN A DIRECTION TRANSVERSE TO RIBS, STEEL ROOF DECK MUST BE SUPPORTED THROUGHOUT THE ENTIRE COVERING DISTANCE TO EXTREMITIES OF ROOF AS INDICATED BY THESE DETAILS.

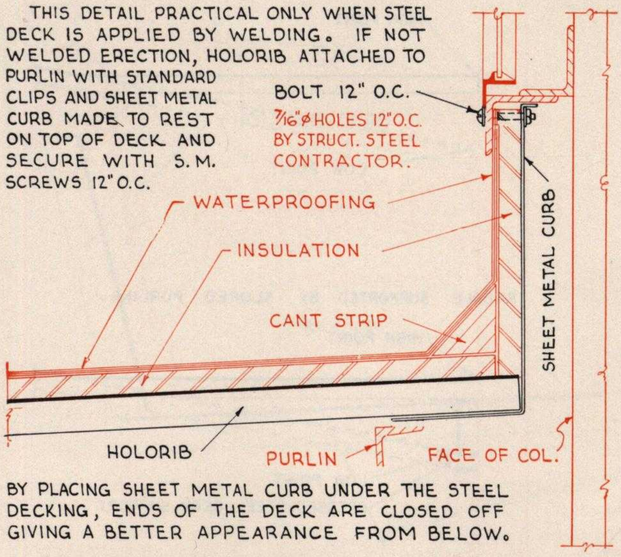
SHEET METAL CLOSURES ATTACHED OVER INSULATION AND WATERPROOFING TO SEAL EDGE OF ROOF AND PROTECT AGAINST WIND DAMAGE. EDGE OF CLOSURE IS WATERPROOFED BY FELT ROOFING STRIP AND UPTURNED BARGE ON CLOSURE WILL PROTECT FELT STRIP FROM WIND.

UPTURNED BARGE ON CLOSURE ALSO PROVIDES STOP IN THE CASE OF GRAVEL OR SLAG SURFACED ROOFS.


METAL SCREW 12" O.C.
HOLORIB
CLOSURE
PURLIN
BOLT 18" O.C.
1 1/8"
STRUCTURAL STEEL CONTRACTOR TO PROVIDE 7/16" ϕ HOLES 9" O.C. IN TOP SASH ANGLE. SASH AND CLOSURE ARE BOLTED ALTERNATELY 18" O.C.
BOLT 12" O C
7/16" ϕ HOLES, 12" O.C. BY STRUCT. STEEL CONTRACTOR
INSULATION
WATERPROOFING
SHEET METAL CURB
CANT STRIP
℄ OF TRUSS
HOLORIB
PURLIN

HIGH - LOW BAY

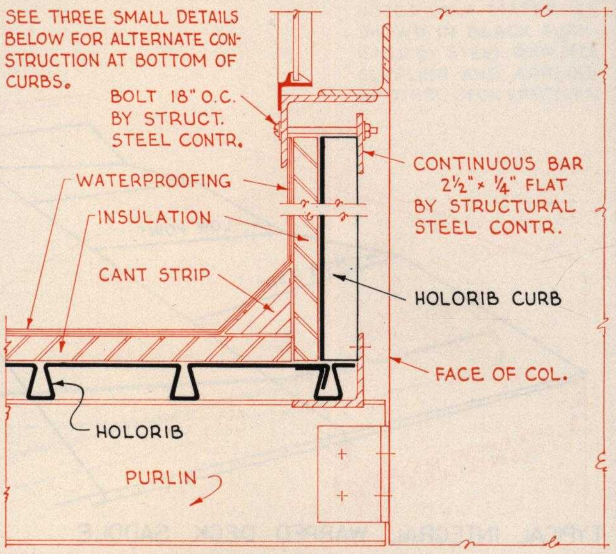
GABLE DETAILS **H-104**



THIS DETAIL PRACTICAL ONLY WHEN STEEL DECK IS APPLIED BY WELDING. IF NOT WELDED ERECTION, HOLORIB ATTACHED TO PURLIN WITH STANDARD CLIPS AND SHEET METAL CURB MADE TO REST ON TOP OF DECK AND SECURE WITH S. M. SCREWS 12" O.C.

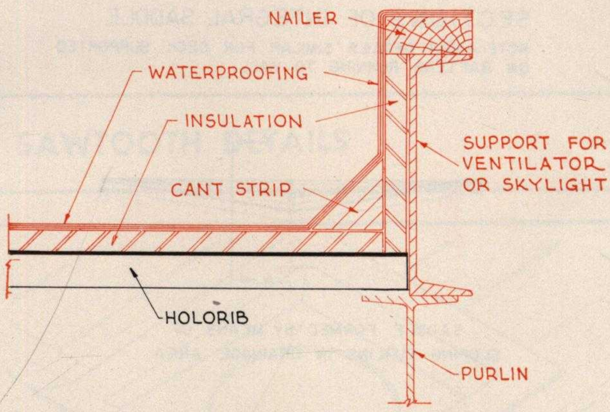
BY PLACING SHEET METAL CURB UNDER THE STEEL DECKING, ENDS OF THE DECK ARE CLOSED OFF GIVING A BETTER APPEARANCE FROM BELOW.

SHEET METAL CURB CONSTRUCTION

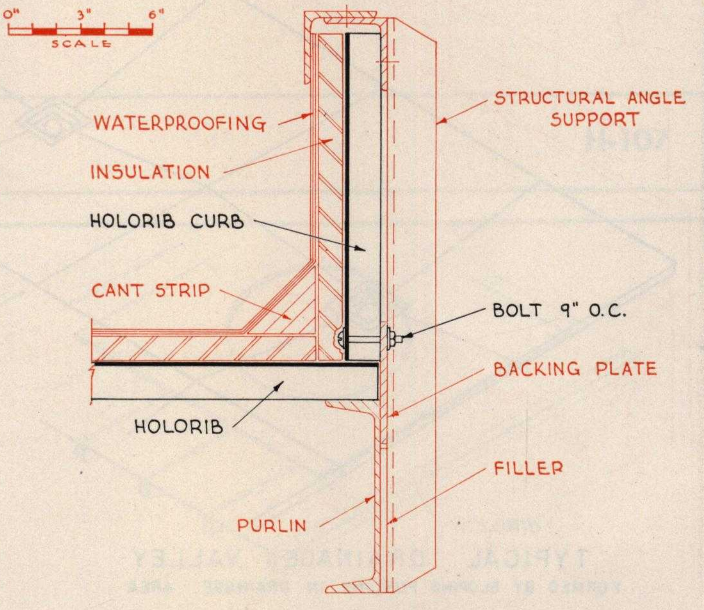

BOLT 18" O.C. BY STRUCT. STEEL CONTR.
CONTINUOUS BAR 2½" × ¼" FLAT BY STRUCTURAL STEEL CONTR.
WATERPROOFING
INSULATION
CANT STRIP
HOLORIB CURB
FACE OF COL.
HOLORIB
PURLIN

SEE THREE SMALL DETAILS BELOW FOR ALTERNATE CONSTRUCTION AT BOTTOM OF CURBS.

HOLORIB CURB CONSTRUCTION



SKYLIGHT OR VENTILATOR WITH STRUCTURAL CURB



SKYLIGHT OR VENTILATOR WITH HOLORIB CURB

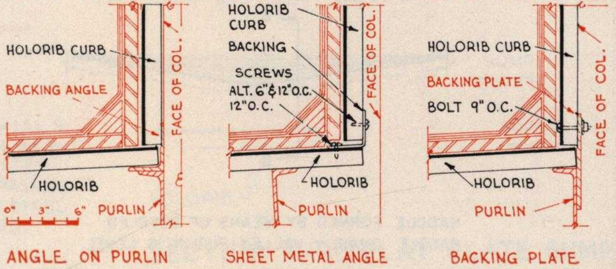
ONLY MATERIALS SHOWN IN BLACK FURNISHED BY STEEL ROOF DECK SUPPLIER AND APPLIED BY STEEL DECK ERECTORS.

ALL METHODS OF FASTENING INDICATED IN DETAILS MAY BE ELIMINATED AND REPLACED BY TACK WELDING WHEN WELDING ERECTION IS USED, EXCEPT FASTENING TOP OF CURBS TO SILL ANGLE AS SHOWN IN THE UPPER RIGHT DETAIL. IF STEEL ROOF DECK IS ERECTED BY CLIPPING, BOTTOM OF CURB MUST BE FASTENED WITH BOLTS AND STRUCTURAL STEEL CONTRACTOR MUST PROVIDE 7/16"ϕ HOLES - 9" O.C. IN VERTICAL LEG OF STRUCTURAL BACKING MEMBER AT BASE OF CURB.

ALL CURBS INSULATED TO FULL HEIGHT WITH THE SAME THICKNESS INSULATION AS ON THE ROOF SURFACE TO PRECLUDE CONDENSATION AND DECREASE HEAT LOSS.

DESIGN OF STRUCTURAL STEEL MUST PROVIDE AMPLE CLEARANCE IN BACK OF SASH SILL ANGLE FOR ALL CURB MATERIALS.

UPPER PORTION OF DETAILS BELOW SAME AS SHOWN IN DETAILS AT TOP OF PAGE

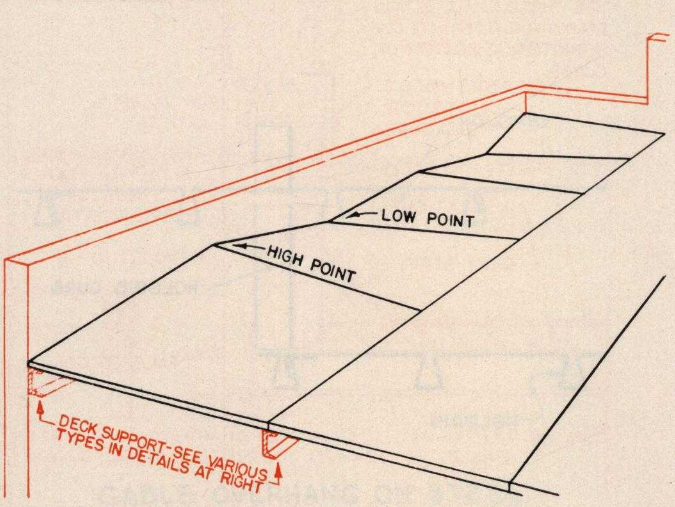


ANGLE ON PURLIN
SHEET METAL ANGLE
BACKING PLATE

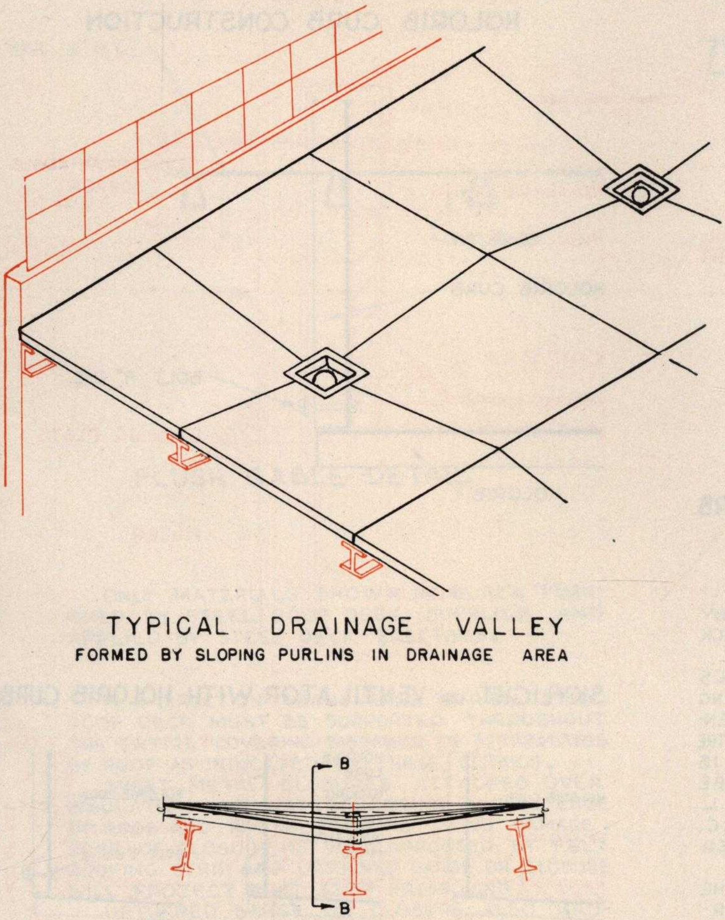
ALTERNATE BACKING FOR HOLORIB CURB

CURB DETAILS

H-105

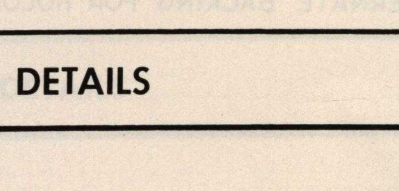


TYPICAL INTEGRAL WARPED DECK SADDLE

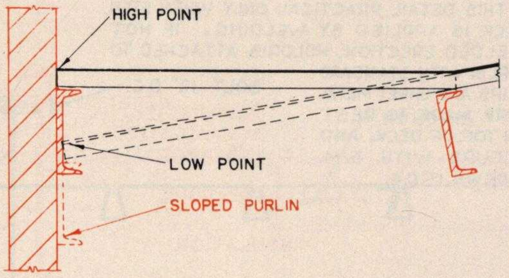


TYPICAL DRAINAGE VALLEY

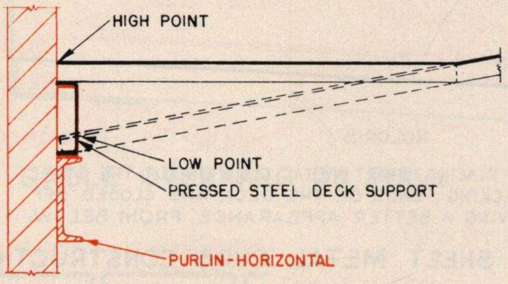
FORMED BY SLOPING PURLINS IN DRAINAGE AREA



SADDLE FORMED BY MEANS OF BEVELED SADDLE CHAIR — VALLEY PURLIN IS LEVEL



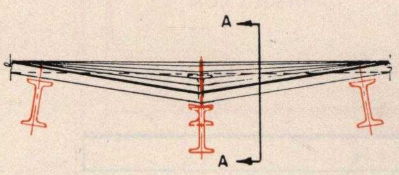
SADDLE SUPPORTED BY SLOPED PURLINS



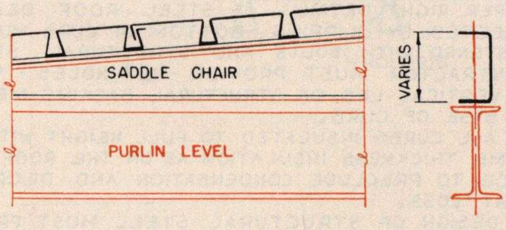
SADDLE SUPPORTED BY FORMED CHANNELS

SECTIONS OF INTEGRAL SADDLE

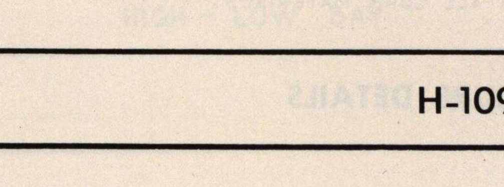
NOTE: ABOVE DETAILS SIMILAR FOR DECK SUPPORTED ON RAFTERS RUNNING TO WALL.



SADDLE FORMED BY MEANS OF SLOPING PURLINS IN DRAINAGE AREA

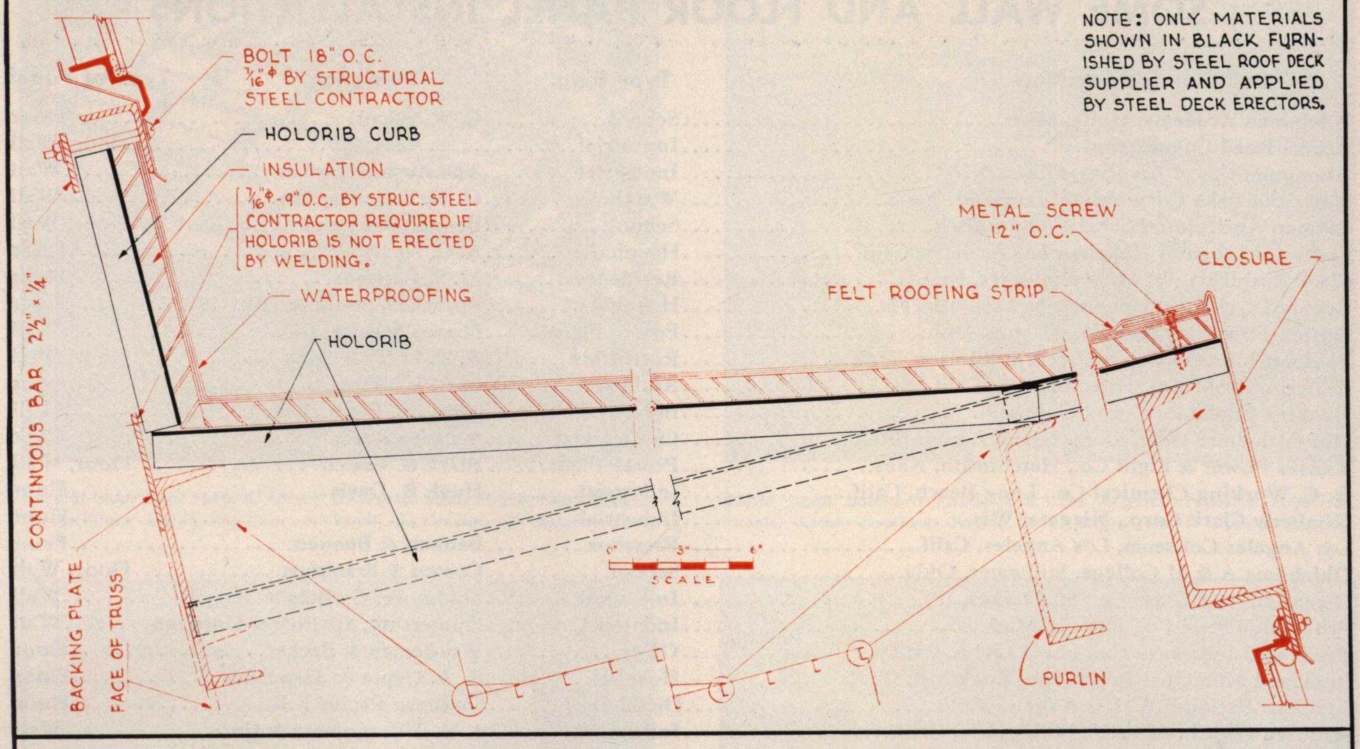


SECTION A-A



SECTION B-B

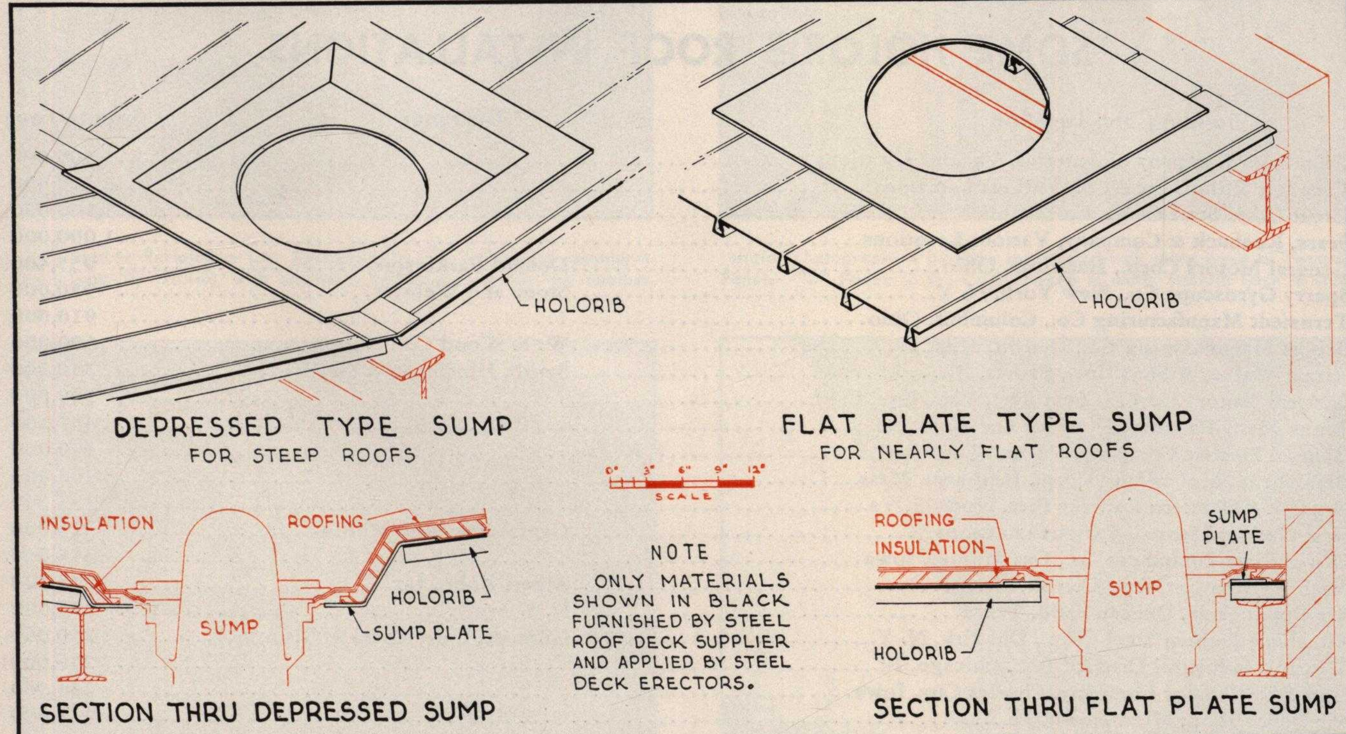
SADDLE DETAILS **H-109**



NOTE: ONLY MATERIALS SHOWN IN BLACK FURNISHED BY STEEL ROOF DECK SUPPLIER AND APPLIED BY STEEL DECK ERECTORS.

SAWTOOTH DETAILS

H-107



DEPRESSED TYPE SUMP
FOR STEEP ROOFS

FLAT PLATE TYPE SUMP
FOR NEARLY FLAT ROOFS

NOTE
ONLY MATERIALS SHOWN IN BLACK FURNISHED BY STEEL ROOF DECK SUPPLIER AND APPLIED BY STEEL DECK ERECTORS.

SECTION THRU DEPRESSED SUMP

SECTION THRU FLAT PLATE SUMP

SUMP DETAILS

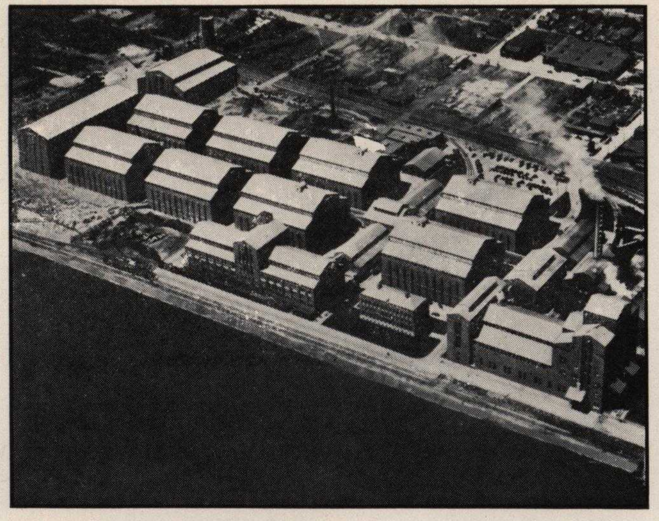
H-108

SOME WALL AND FLOOR PANEL INSTALLATIONS

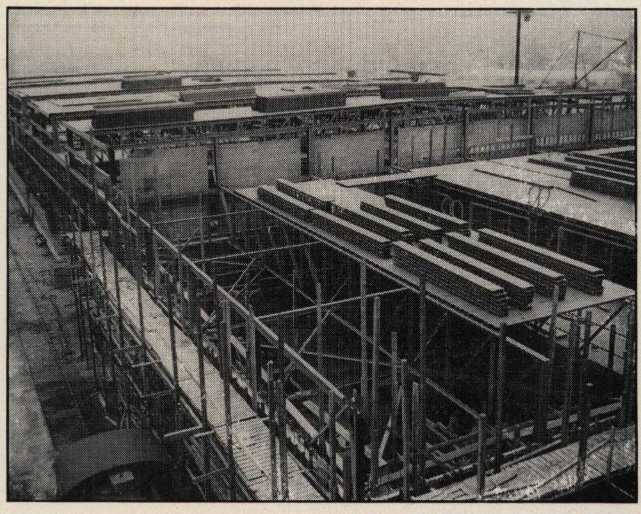
Building and Location	Type Bldg.	Designer	Type of Panel
Adelphian Academy, Holly, Mich.	School	C. W. Nicol	Floor
Alaska Road Commission	Industrial		Floor, Wall
Aluminum Co. of America, Olean, N. Y.	Industrial	The Austin Company	Wall
American Enka Corporation, Lowland, Tenn.	Warehouse	H. K. Ferguson Co.	Wall
Carman Agricultural School, Flint, Mich.	School	Bennett & Straight	Floor, Wall
Cedars of Lebanon Hospital, Los Angeles, Calif.	Hospital	A. C. Neartin	Floor
Clark Residences (14), Westchester, Ill.	Residences	M. S. Carstens	Floor
County Psychiatric Hospital, Jacksonville, Fla.	Hospital	Reynolds, Smith & Hills	Floor
Dayton Power & Light Co., Dayton, Ohio	Power Plant	Ebasco Service, Inc.	Wall
Endicott-Johnson Co., Endicott & Johnson, N. Y.	Recreation	A. T. Lacey & Sons	Floor, Wall
Erickson Residence, Hillsborough, Calif.	Residence	L. G. Erickson	Floor
Hankins Container Corp., Union, N. J.	Industrial	Gilmore, Carmichael & Olson	Wall
Herpolsheimer Dept. Store, Grand Rapids, Mich.	Commercial	Maurice Reidy	Floor
Kansas Power & Light Co., Hutchinson, Kans.	Power Plant	Black & Veatch	Floor, Wall
K. C. Working Chemical Co., Long Beach, Calif.	Industrial	Hugh R. Davis	Floor
Kimberly Clark Corp., Niagara, Wis.	Industrial		Floor
Los Angeles Coliseum, Los Angeles, Calif.	Pressbox	Bennett & Bennett	Floor
Oklahoma A & M College, Stillwater, Okla.	School	Coston & Frankfurt	Floor, Wall
Owens-Illinois Glass Co., St. Clarkes, Ill.	Industrial	Skidmore, Owings & Merrill	Wall
Production Steel Co., Detroit, Mich.	Industrial	Emmerling, Spellicy & Hartman	Wall
Prudential Insurance Co., Los Angeles, Calif.	Office	Wurdeman & Becket	Floor
Rockford Municipal Sanitarium, Rockford, Ill.	Hospital	R. A. Orput & Associates	Floor
Southern Pacific R.R., Los Angeles, Calif.	Diesel Shop	Southern Pacific R.R.	Floor
Standard Oil Co. of Calif., El Segundo, Calif.	Industrial	J. M. Montgomery & Co.	Wall
Stover Residence, York, Nebr.	Residence		Floor
U. S. Rubber Reclaiming Co., Cheektowaga, N. Y.	Industrial	Private Plans	Wall
Wilson Memorial Hospital, Johnson City, N. Y.	Hospital	A. T. Lacey & Sons	Floor

SOME HOLORIB ROOF INSTALLATIONS

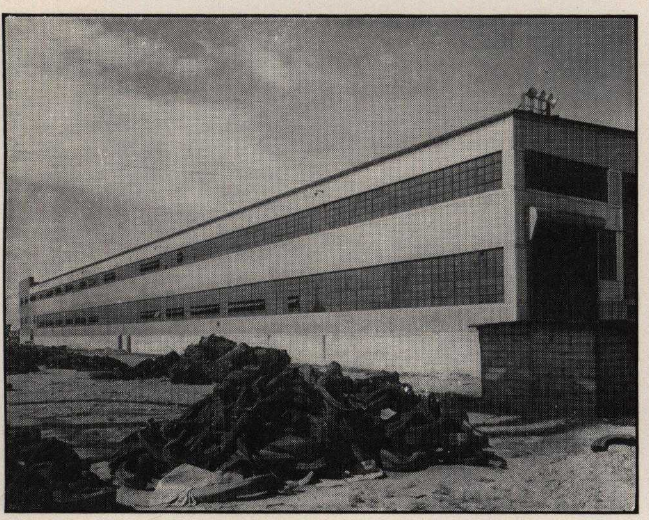
Building and Location	Designer	Square Feet
Aluminum Company of America, Various Locations		3,500,000
Carnegie Illinois Steel Co., Various Locations		2,400,000
Great Lakes Steel Corp., Ecorse, Mich.		1,100,000
Sears, Roebuck & Company, Various Locations		1,000,000
General Motors Corp., Hamilton, Ohio	Donald Parkinson	955,400
Sperry Gyroscope Co., New York, N. Y.	Stone and Webster	950,000
Ternstedt Manufacturing Co., Columbus, Ohio		910,000
Briggs Manufacturing Co., Detroit, Mich.	W. E. Wood Co.	600,000
Hiram Walker & Sons, Inc., Peoria, Ill.	Smith, Hinchman & Grylls	550,000
General Motors Corp. (Chevrolet), Van Nuys, Calif.		549,000
Johns Manville Corp., Various Locations		459,100
General Electric Company, Various Locations		430,000
Bethlehem Shipbuilding Corp., Hingham, Mass.		360,000
Norfolk & Western Railway Pier, Norfolk, Va.		334,500
First National Stores, Various Locations	Ganteaume & McMullin	323,000
Oliver Farm Equipment Co., Des Moines, Iowa		318,000
Nash Kelvinator Corp., Detroit, Mich.	Albert Kahn, Inc.	273,700
Air Depot Shop, Duncan Field, Texas	U. S. Army	272,000
Allegheny Ludlum Steel Corp., Dunkirk, N. Y.	Gilmore, Carmichael & Olson	250,000
Clearing Industrial District, Inc., Chicago, Ill.		250,000
Hart Parr Tractor Company, Charles City, Iowa		246,000
Air Depot Shop, Middletown, Pa.	U. S. Army	243,000
Western Crown Cork & Seal Co., San Francisco, Calif.	H. V. Bruivnier & Albert Roller	224,000
American Grocery Stores, Buffalo, N. Y.		220,000
Simonds Saw & Steel Company, Fitchburg, Mass.	The Austin Company	213,800
Westinghouse Elect. & Mfg. Co., Various Locations		211,900
Spicer Manufacturing Company, Toledo, Ohio	A. Bentley & Sons Company	210,000



Holorib Steel Deck roofs at Hiram Walker & Sons, Incorporated, Peoria, Ill. Architect: Smith, Hinchman & Grylls. Contractor: W. Jobst & Sons.

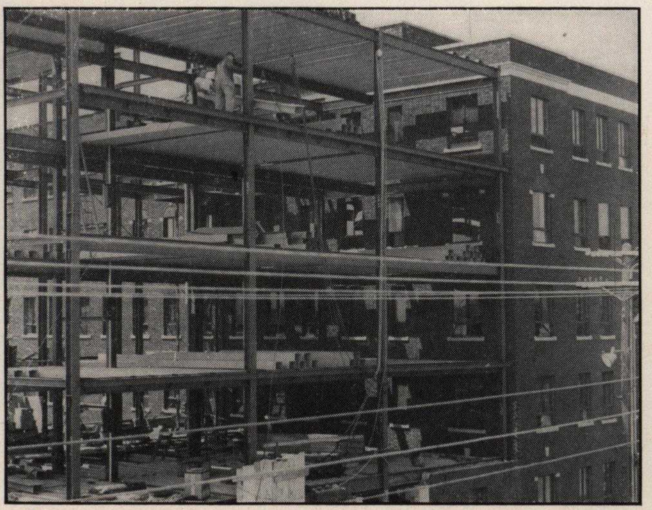


Diesel shop, Southern Pacific R. R., Los Angeles. Fenestra Type "D" Panels. Archt: Southern Pacific R. R. Engrs. Contr: Vinnell Co. Inc.

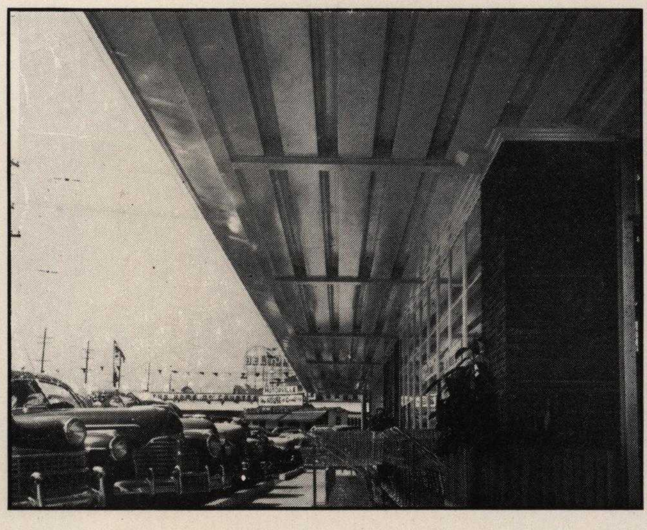


U. S. Rubber Reclaiming Co., Cheektowago, N. Y. Fenestra aluminum-steel Type "C" Panels, with aluminum surface exposed to the weather.

Interior photograph of building constructed with three types of Fenestra Panels—"D" Panels in floor, "C" Panels in walls, Holorib Deck in roof.



Wilson Memorial Hospital, Johnson City, New York. Noise quieting is accomplished with Fenestra acoustical Type "AD" Panels. Private plans.



Fenestra Type "D" Building Panels form an attractive canopy for Ralph's Grocery Store, Huntington Park, California. Architect: Stiles Clement.

DETROIT STEEL PRODUCTS COMPANY

General Offices: 2250 East Grand Blvd., Detroit 11, Michigan

Factories at Detroit, Buffalo, Philadelphia, Oakland and Erie, Pa.

Local Representatives in 200 Principal Cities. See "FENESTRA STEEL WINDOW COMPANY" in the local Telephone Directory

ATLANTA (3)	**601 Mortgage Guarantee Bldg.**
BALTIMORE (1)	**13 West Franklin Street**
BOSTON (39) (Cambridge)	**265 Vassar Street**
CHICAGO (11)	**840 North Michigan Avenue**
CINCINNATI (2)	**302—2nd Nat'l Bank Bldg.**
CLEVELAND (14)	**2800 St. Clair Avenue**
DALLAS (1)	**605 Doggett Bldg.**
DETROIT (11)	**2250 East Grand Boulevard**
NEW YORK (17)	**475 Fifth Avenue**
OMAHA (2)	**Omaha National Bank Bldg.**
PHILADELPHIA (3)	**905 Architects Bldg.**
PITTSBURGH (13)	**434 Melwood Street**
RICHMOND, VA.	**507 E. Franklin Street**
ST. LOUIS (8)	**4053 Lindell Boulevard**
WASHINGTON (5)	**14th and K Streets, N.W.**

PACIFIC COAST DIVISION

General Office: 1310 63rd St., Emeryville 8 (Oakland), Calif.

LOS ANGELES (13)	**816 West Fifth Street**
SAN FRANCISCO (4)	**940 Russ Bldg.**
SEATTLE (1)	**White-Henry-Stuart Bldg.**

Fenestra

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BP-1
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